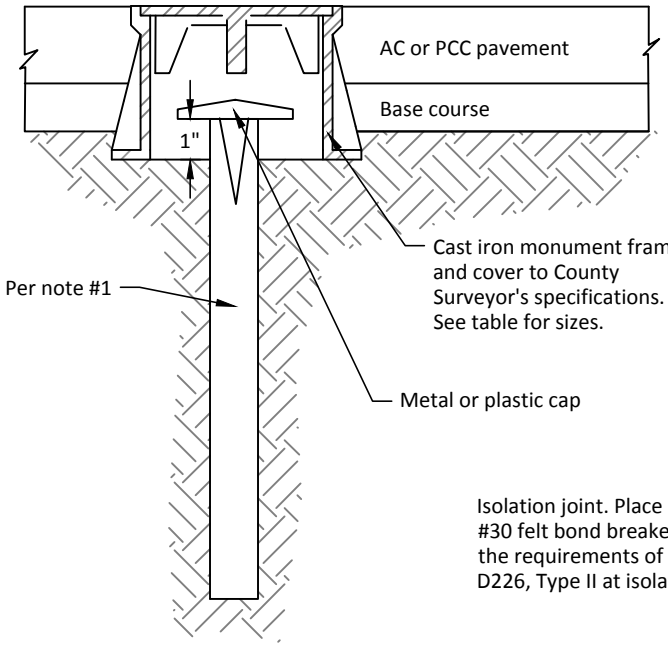
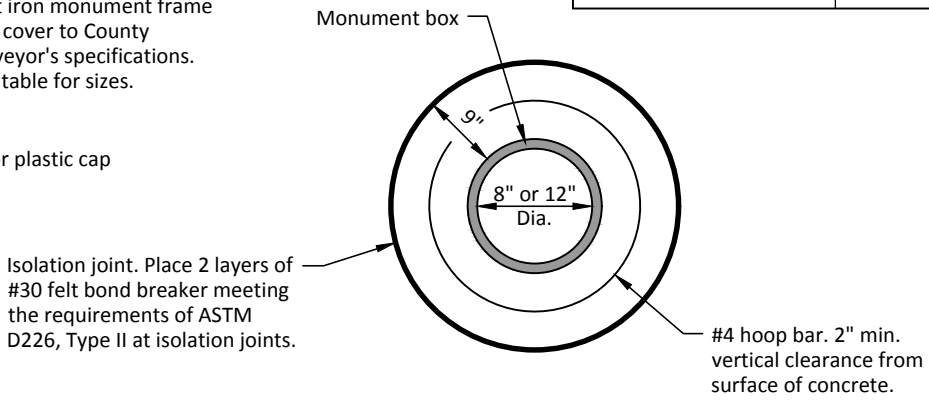
Appendix A
Standard Drawings

INDEX TO CITY OF HILLSBORO STANDARD DRAWINGS

Box Sizes	
Functional Classification	Dia.
Arterial	12"
Collector	12"
Neighborhood Route	8" or 12"
Local Road	8" or 12"
Alley	8" or 12"



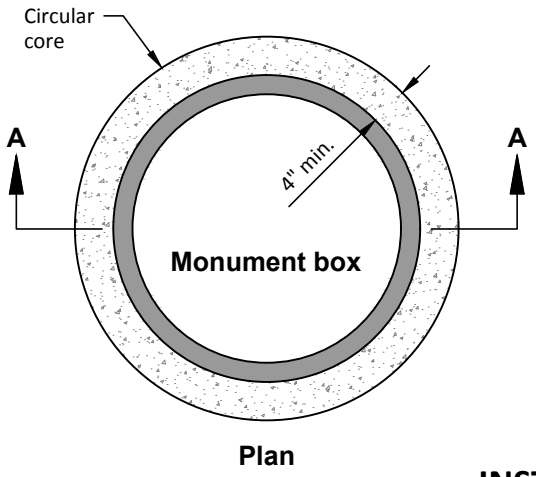


STANDARD MONUMENT BOX

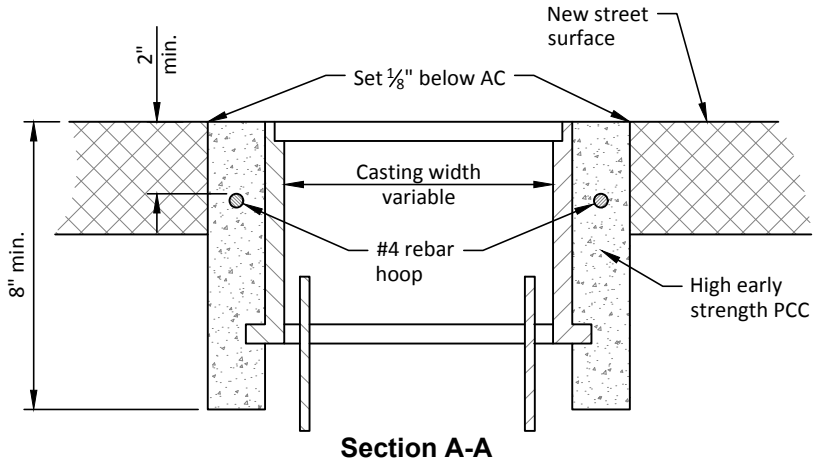
SCALE: NTS

INSTALLATION IN PCC ROADWAY

SCALE: NTS



Plan



Section A-A

INSTALLATION IN AC ROADWAY

SCALE: NTS

NOTES:

1. All monuments shall use either ⅝" dia. X 30" long iron rod or ¾" inside dia. X 30" long gavanized iron pipe.

2. Any monuments that may be subject to destruction or disturbance shall be protected in accordance with ORS 209.140-155.

Models Approved for Use in Washington County

East Jordan Iron Works, Inc.
8" Monument Box:
- 00361411 #3614Z 8-1/4" x 8" Monument Body
- 00361421 #3614A "Monument" Cover

12" Monument Box:
- 00367311 #3673Z 12" x 7-7/8" Monument Body
- 00367323 #3673A "WC" Monument Cover w/ Drop Handle

Olympic Foundary
8" Monument Box:
- Model No. M1014 8" Frame
- Model No. M1014 8" Cover

12" Monument Box:
- Model No. M1035 12" Frame 14-6330
- Model No. M1035 12" Cover 15-14 6331
- Model No. M1036 12" Frame 14-6329
- Model No. M1036 12" Cover 14-638

Hillsboro Public Works

MONUMENT BOXES

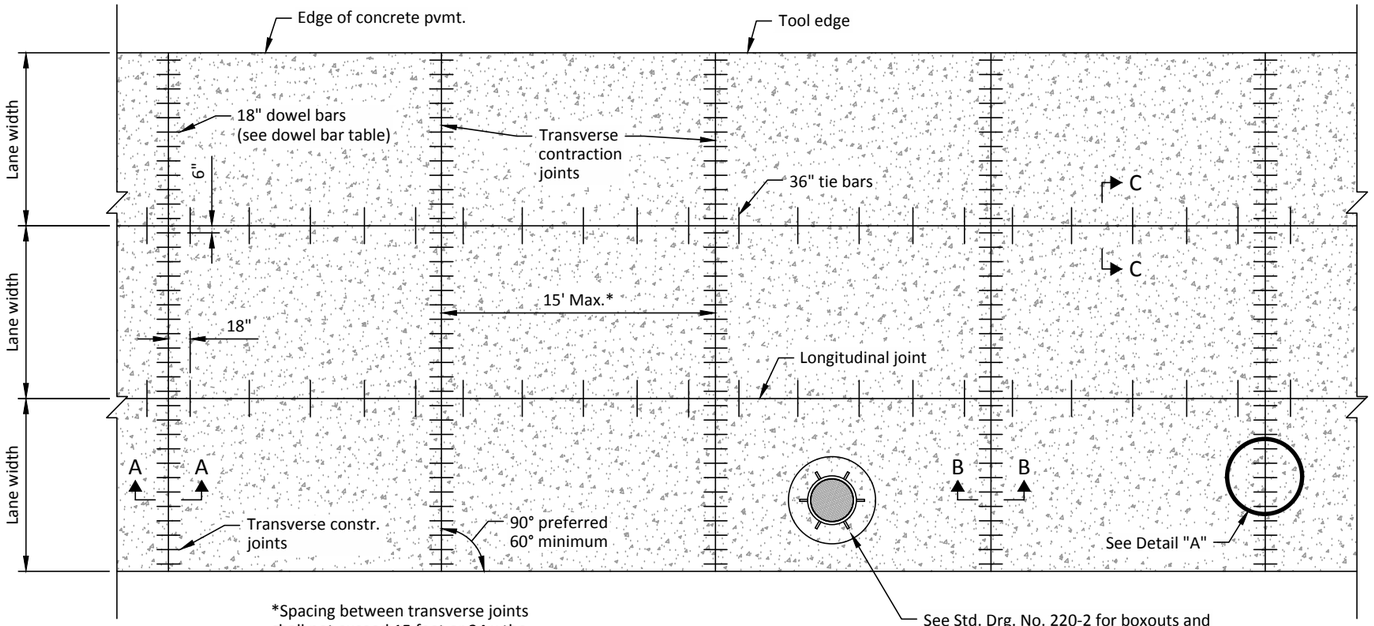
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 150-1

SCALE NTS

FILE NAME: COH-150-1.DWG

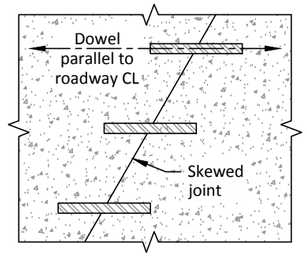
PLOT DATE: 7/13/2017 4:18 PM



*Spacing between transverse joints shall not exceed 15 feet or 24 x the slab thickness on unbound base or 21 x slab thickness on stabilized base.

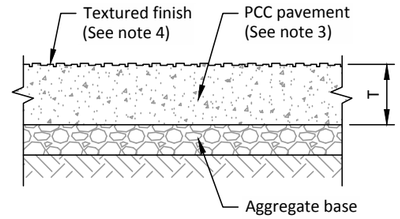
PLAN

SCALE: NTS



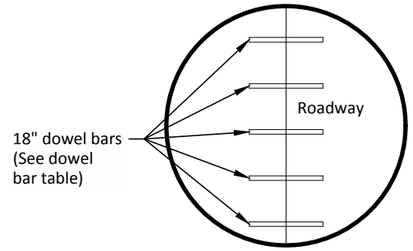
DOWEL AT SKEWED JOINT

SCALE: NTS



TYPICAL PAVEMENT SECTION

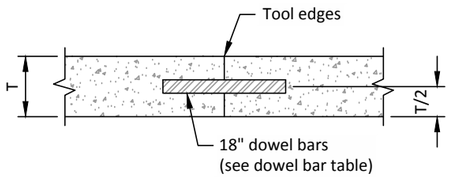
SCALE: NTS



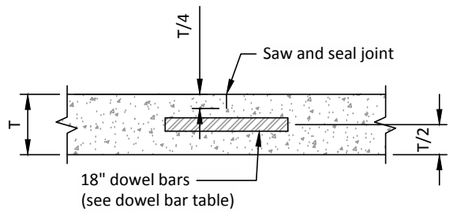
DETAIL "A"

SCALE: NTS

DOWEL BAR TABLE		
Pvmt. Thkn. (T)	Dowel Dia.	C/C Dowel Spacing
7" - 8"	1"	12"
8½" - 10"	1¼"	12"
10½" & up	1½"	12"



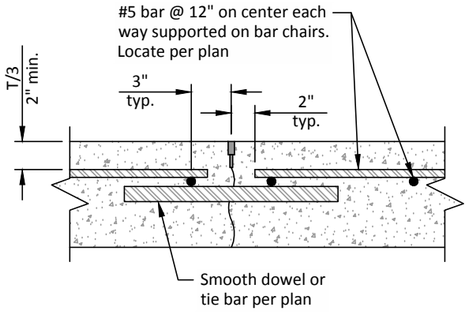
Section A-A
Construction Joint



Section B-B
Contraction Joint

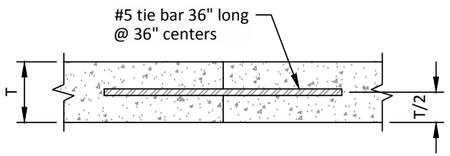
TRANSVERSE JOINT

SCALE: NTS

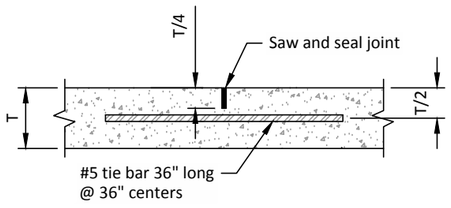


REINFORCEMENT GRID PLACEMENT NEAR JOINTS

SCALE: NTS



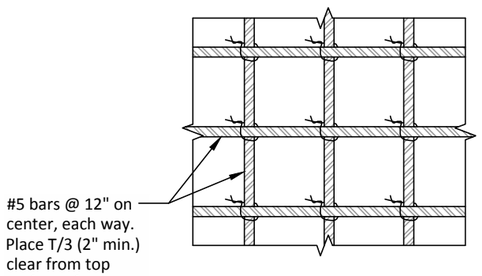
Contact Joint



Weakened Plane Joint

SECTION C-C LONGITUDINAL JOINT

SCALE: NTS



REINFORCEMENT GRID

SCALE: NTS

NOTES:

1. Install tie bars along longitudinal joints between concrete panels. Tie bars are not installed between concrete pavement and ACP pavement.

2. Center tie bars and dowel bars on joint.

3. If the time frame designated for opening traffic is less than 72 hours after concrete placement, provide Class HES4000 - 1½ concrete designed to attain a minimum average compressive strength of 3,000 psi prior to allowing traffic on the concrete. Otherwise furnish Class 4000 - 1½ paving concrete.

4. The surface of the concrete shall have a textured finish using a steel-tine tool with ⅛ inch tines that will mark the finished concrete to a depth of 1/16 inch to ⅛ inch. Randomly space the markings from ½ inch to 1¼ inches as approved. Avoid overlaps of the texturing. Markings shall be transverse to the roadway centerline and full roadway width.

5. New interior longitudinal and transverse joints shall be sawcut as soon as the concrete has set enough to allow sawing without tearing or raveling.

6. The new saw cut transverse and longitudinal joints shall be filled with poured rubber-asphalt joint filler. The saw cut joint shall be flushed with water, vacuumed to remove cement slurry and dried before installing the joint filler.

7. Irregularly shaped panels, rectangular panels with an aspect ratio exceeding 1:1.25, and panels containing more than one utility structure (such as manholes, valves, etc.) shall be reinforced. See reinforcement grid details this sheet.

8. All tie bars and dowel bars shall be Grade 60 steel and shall be smooth, epoxy coated, circular, and greased.

SCALE: AS SHOWN
HORIZ.
VERT.
DRAWN: XXX
CHECKED: XXX

#	DATE	REVISION	BY	APP'D

Hillsboro Public Works

STANDARD DRAWING

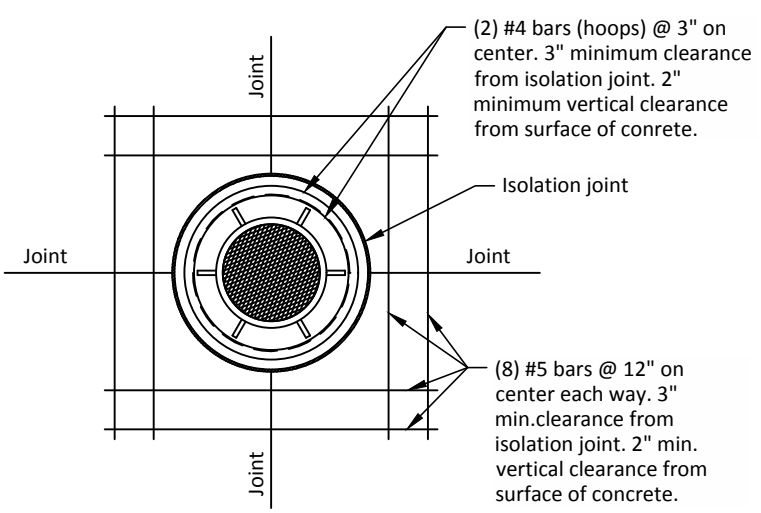
CONCRETE ROADWAYS

PROJECT NO.
STANDARD

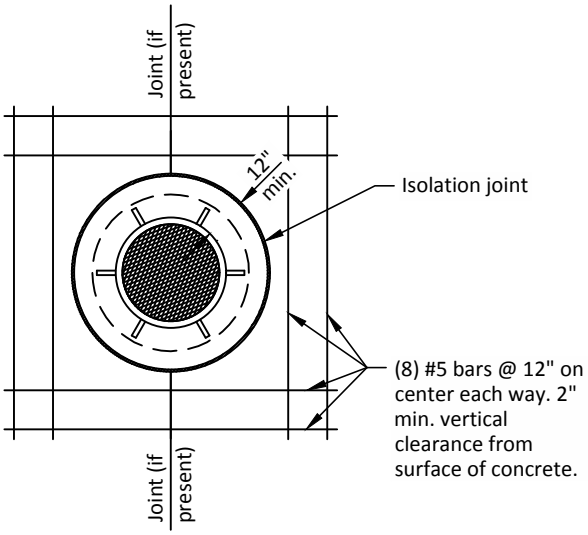
STD. DRG. NO.
220-1

PLOT DATE: 5/17/2017

FILE NAME: COH-220-1.DWG



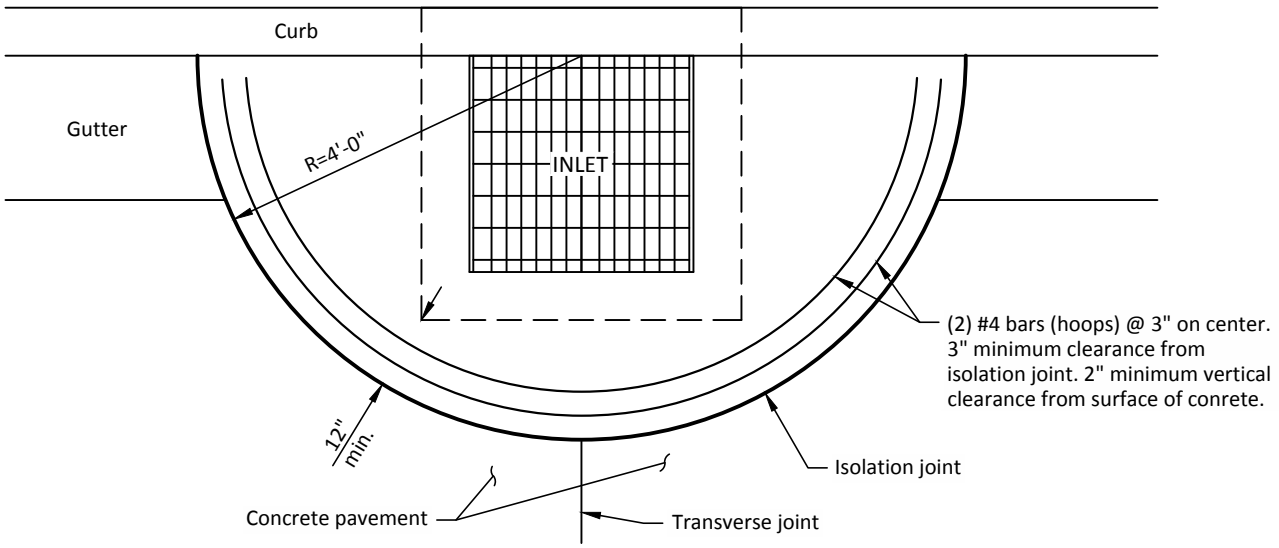
Boxout on Joint Intersection



Boxout on Joint or Wholly Within Panel

MANHOLE BOXOUT

SCALE: NTS



GUTTER & CURB INLET CATCH BASIN (CG-2) BOXOUT

SCALE: NTS

NOTES:

1. Place 2 layers of #30 felt bond breaker meeting the requirements of ASTM D226, Type II at isolation joints.

2. Locate joint on center of manhole rim when possible.

Hillsboro Public Works

MANHOLE AND INLET CONCRETE BOXOUTS

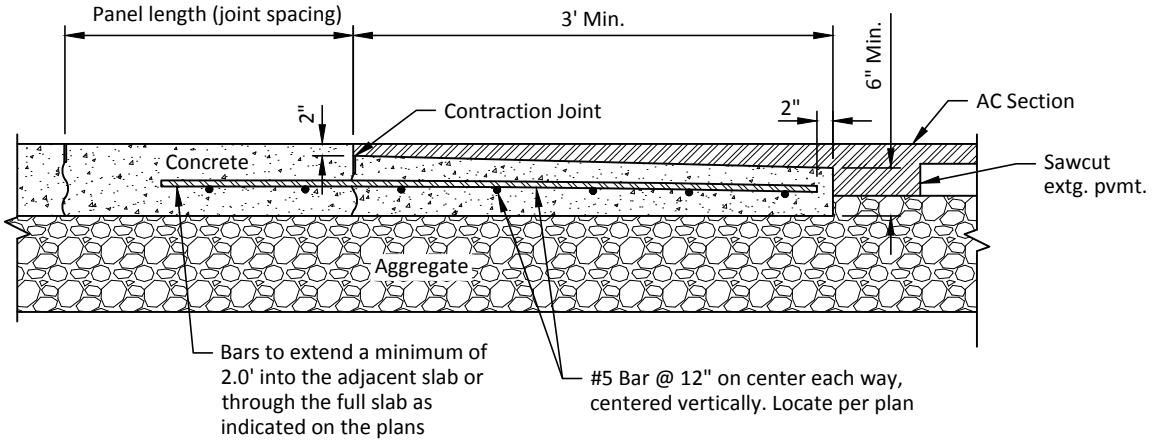
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 220-2

SCALE NTS

FILE NAME: COH-220-2.DWG

PLOT DATE: 7/13/2017 4:00 PM



CONCRETE IMPACT PANEL

SCALE: NTS

Hillsboro Public Works

CONCRETE IMPACT PANEL

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 220-3

SCALE NTS

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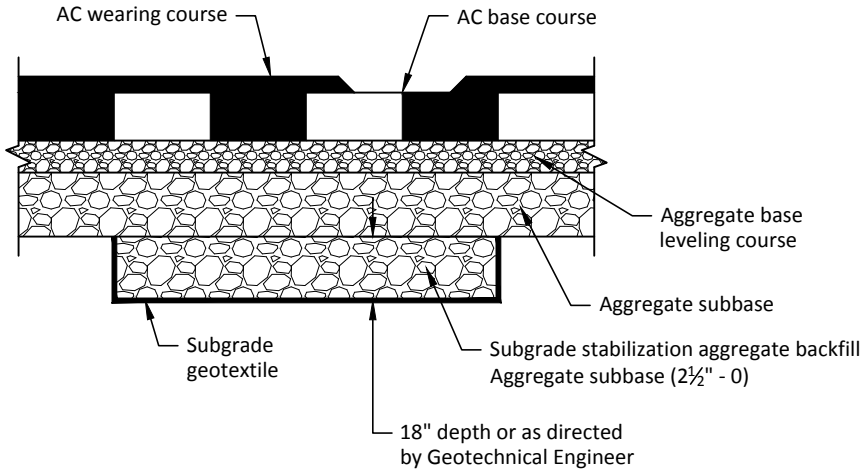
PLOT DATE: 3/7/2017 3:46 PM



SUBGRADE STABILIZATION

SCALE: NTS

NOTES:

1. For surfacing details not shown, see typical sections.
2. Locations as directed

Hillsboro Public Works

SUBGRADE STABILIZATION

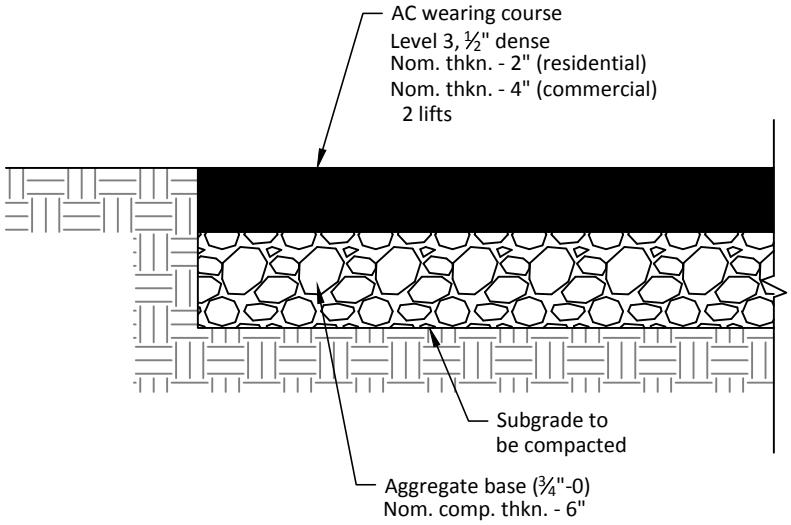
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 220-4

SCALE NTS

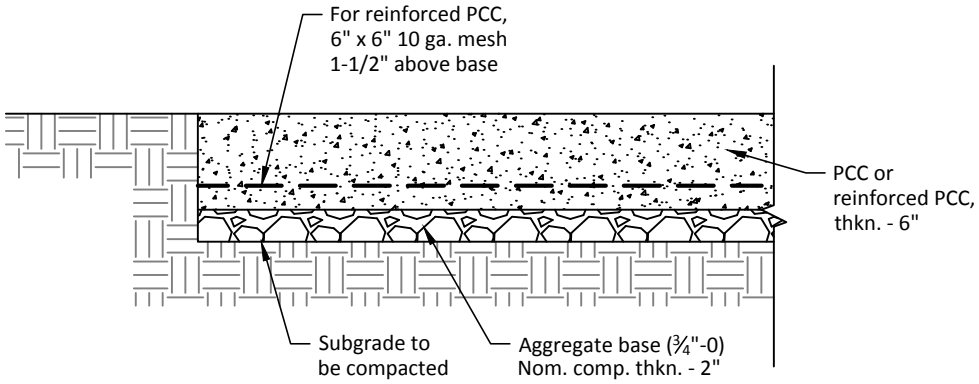
FILE NAME: COH-220-4.DWG

PLOT DATE: 3/7/2017 3:47 PM



ASPHALT CONCRETE (AC) DRIVEWAY

SCALE: NTS



PORTLAND CEMENT CONCRETE (PCC) DRIVEWAY

SCALE: NTS

Hillsboro Public Works

DRIVEWAY PAVEMENT SECTIONS

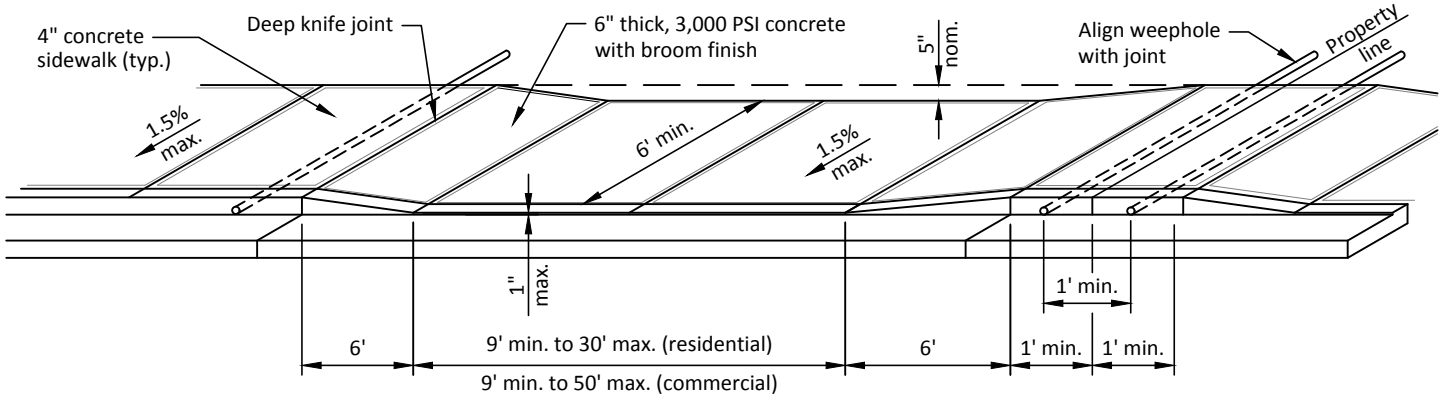
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 220-5

SCALE NTS

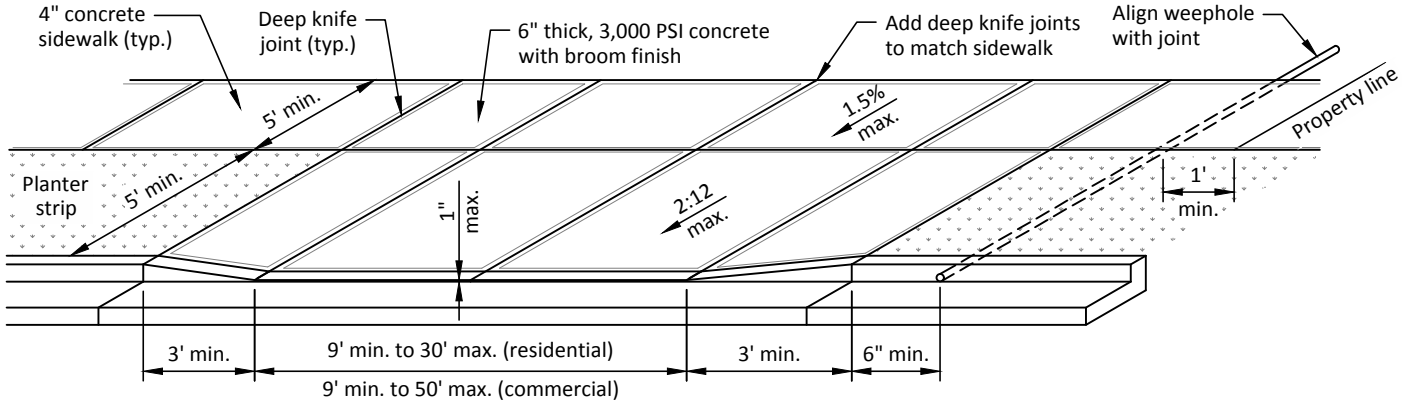
FILE NAME: COH-220-5.DWG

PLOT DATE: 3/7/2017 3:47 PM



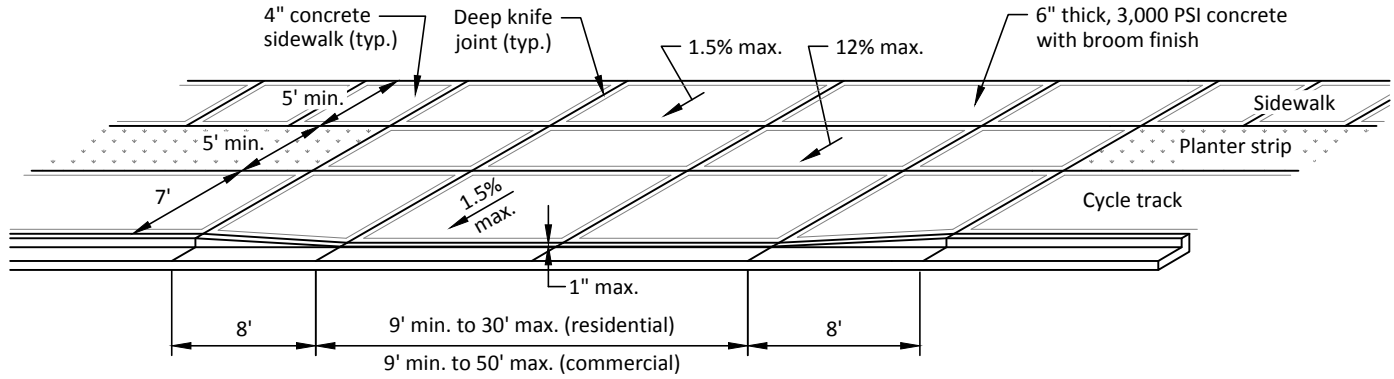
DRIVEWAY APPROACH AT CURB

SCALE: NTS



DRIVEWAY APPROACH WITH PLANTER STRIP

SCALE: NTS



DRIVEWAY APPROACH WITH CYCLE TRACK

SCALE: NTS

NOTES:

1. Use concrete mix with minimum 3,000 PSI compressive strength at 28 days.
2. Compact subgrade until firm and unyielding and install a minimum of 2" of compacted 3/4"-0 aggregate base rock.
3. Sawcut all concrete and asphalt. Remove entire curb or curb and gutter for new driveway approaches on existing streets.
4. Install 24" truncated dome panel across entire width of sidewalk on both sides of signalized driveways. See ODOT Std. Drg. RD759 for additional truncated dome requirements.
5. Driveway approaches shall comply with all ADA requirements.
6. Construct knife joint at driveway centerline and at 10' OC max. spacing.
7. Commercial driveway approaches may require additional reinforcement.
8. Provide at least one weephole for each lot/parcel. Align knife joint over weephole.
9. Minimum spacing between potential conflict points on raised cycle tracks, such as driveways, alleys, and at grade street crossings, shall be 200'.

Hillsboro Public Works

DRIVEWAY APPROACHES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 230-1

SCALE NTS

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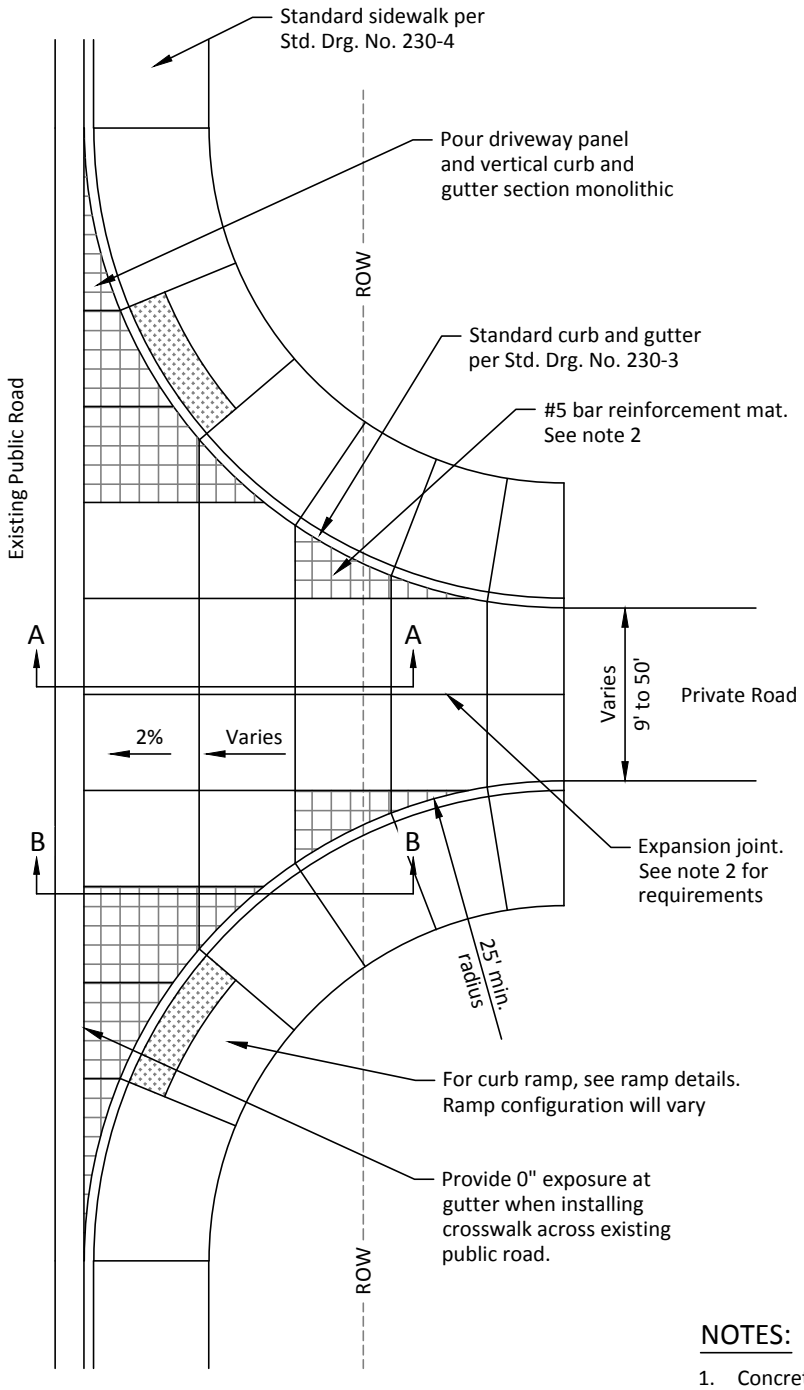
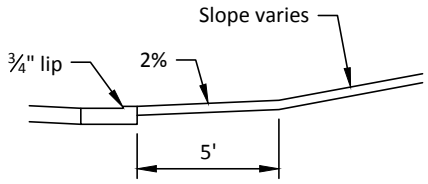
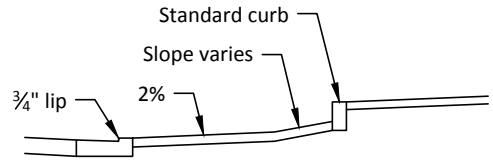
PLOT DATE: 6/20/2017 9:09 AM



Plan View



Section A-A



Section B-B

NOTES:

1. Concrete shall be 6" thick with 3,000 PSI min. compressive strength.
2. Panel jointing dimensions shall be square or conform to maximum 1:1.25 ratio of length:width. If panel does not meet 1:1.25 ratio, or is not rectangular, #5 bar mat shall be placed at 12" OC, mid-height in slab.
3. Private road approaches shall be used only for business accesses and for private roads located in a single tract. Standard driveway approaches, as shown in Std. Drg. No. 230-1, shall be used to serve residential flag lots.

Hillsboro Public Works

PRIVATE ROAD APPROACH

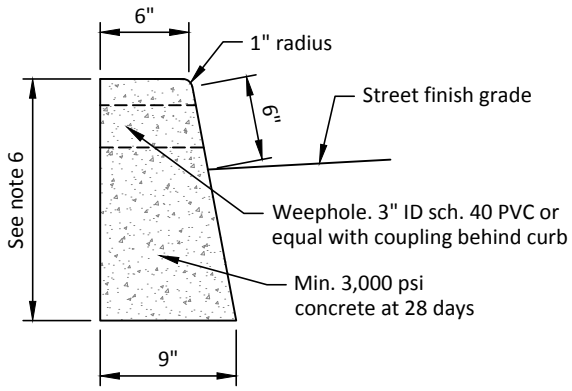
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 230-2

SCALE NTS

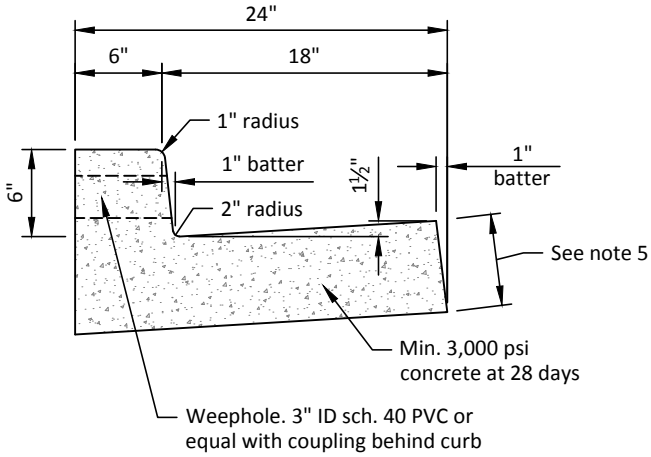
FILE NAME: COH-230-2.DWG

PLOT DATE: 4/6/2017 4:45 PM



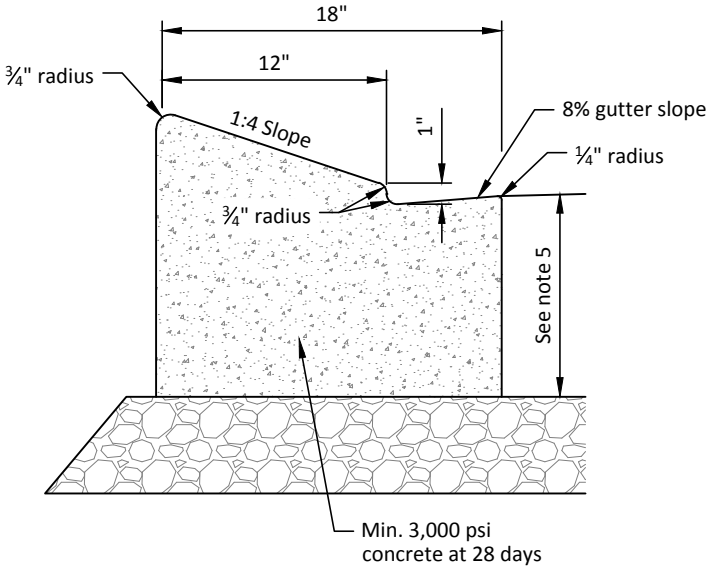
STANDARD CURB

SCALE: NTS



CURB AND GUTTER

SCALE: NTS



MOUNTABLE CURB

SCALE: NTS

NOTES:

1. Expansion joints shall be provided at each point of tangency of the curb material. Joints shall be pre-molded, non-extruding, with a min. thickness of ½".
2. Contraction joints shall be a minimum of 2" deep, spaced a maximum of 15 feet apart, and match PCC street slab joints.
3. Base rock 1½" minus, compacted to 95% AASHTO T-180, shall be to subgrade of street structure or 4" in depth, whichever is greater, extending 1' behind curb.
4. Slope of gutter shall not exceed 5% at sidewalk ramp.
5. Gutter thickness shall match the pavement thickness, where thickness exceeds six inches.
6. The height of the standard curb shall match the pavement thickness plus the curb exposure when greater than 16".

Hillsboro Public Works

CURBS

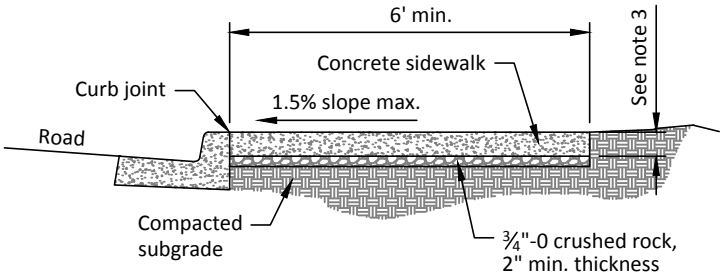
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 230-3

SCALE NTS

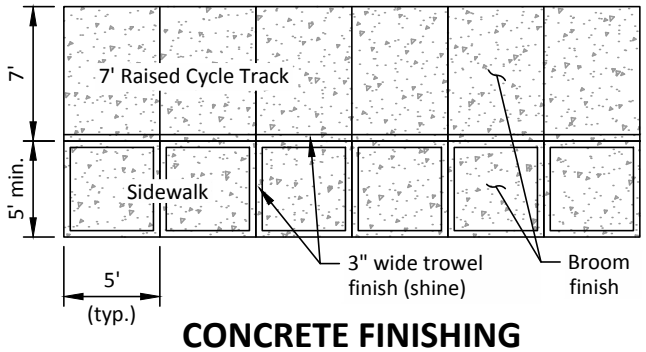
FILE NAME: COH-230-3.DWG

PLOT DATE: 3/14/2017 10:31 AM



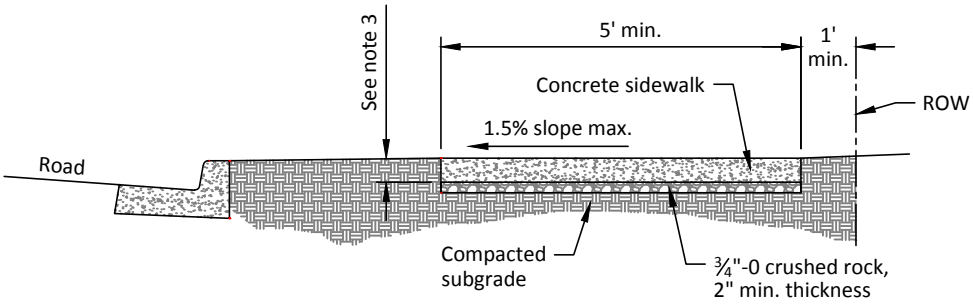
CURB-TIGHT SIDEWALK

SCALE: NTS



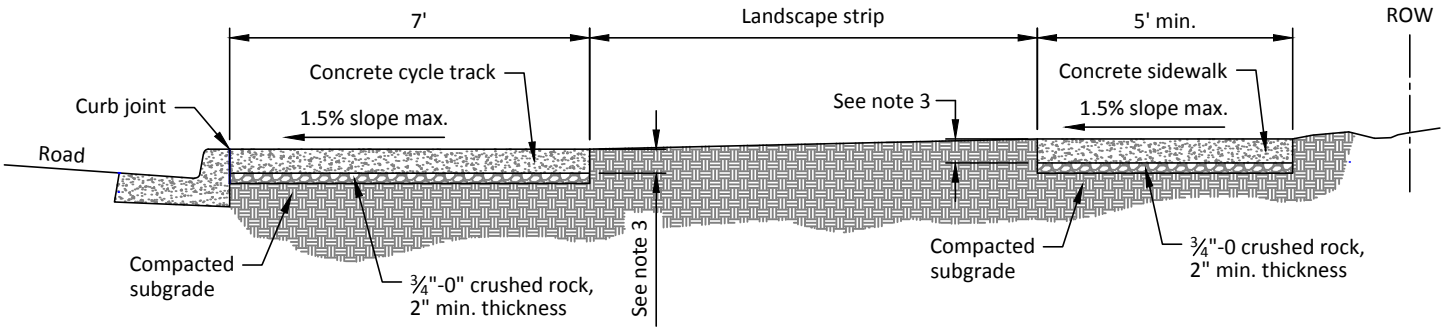
CONCRETE FINISHING

SCALE: NTS



SIDEWALK AT PROPERTY LINE

SCALE: NTS



SIDEWALK WITH CYCLE TRACK

SCALE: NTS

NOTES:

1. Concrete shall be 3,000 PSI at 28 days. Batch mix tickets shall be made available at Inspector's request.
2. Cycle track and sidewalk panels shall be 5 feet long. Trowel finish (shine) perimeters of each sidewalk panel and both sides of the longitudinal joint between the sidewalk and cycle track when adjacent. Broom finish all panels.
3. Sidewalk thickness shall be a minimum of 6" through driveway sections and 4" elsewhere.
4. Weepholes in curbs shall be extended to the back of sidewalk with 3" ID sch. 40 pipe and coupler at ±1.5% slopes. Align knife joints over weepholes.
5. Trowel surfaces at curb joints with a minimum ½" radius.
6. When parking is provided, the location of the cycle track and landscape strip shall be reversed, or additional width added to cycle track, to prevent car doors opening into the cycle track.

Hillsboro Public Works

SIDEWALKS AND CYCLE TRACKS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 230-4

SCALE NTS

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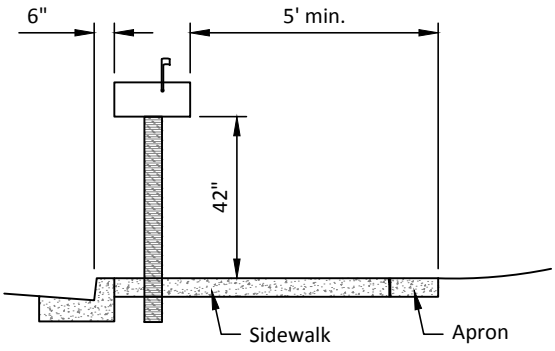
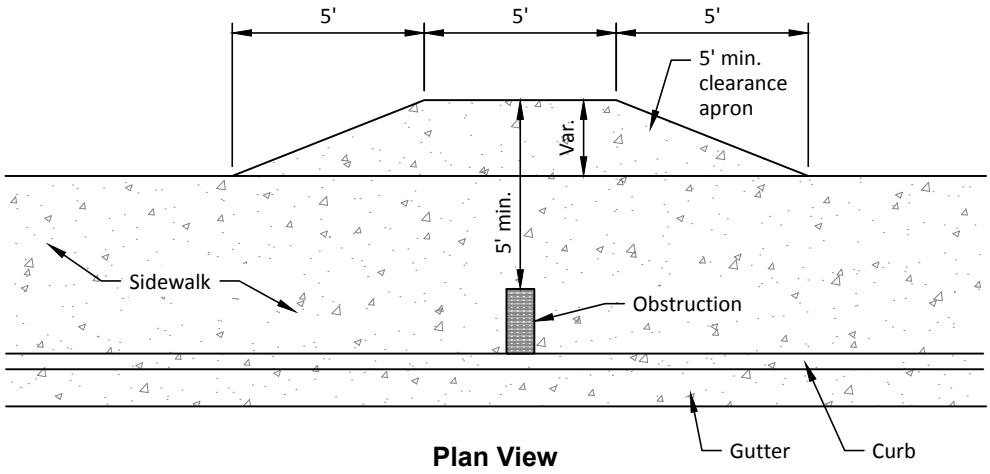


Section View



Plan View

NOTES:

1. Use this detail for all sidewalk obstructions including mailboxes, light poles, utility poles, etc.
2. Maintain minimum 5' clear zone around all obstacles.
3. Install mailboxes in accordance with ODOT standard drawings.
4. Permanent location of mailboxes to be determined by the US Postal Service.
5. Face of mailboxes to be mounted flush with the back of curb.
6. Sidewalk easement or right-of-way dedication may be required if apron extends onto private property.

Hillsboro Public Works

SIDEWALK WIDENING AT OBSTRUCTION

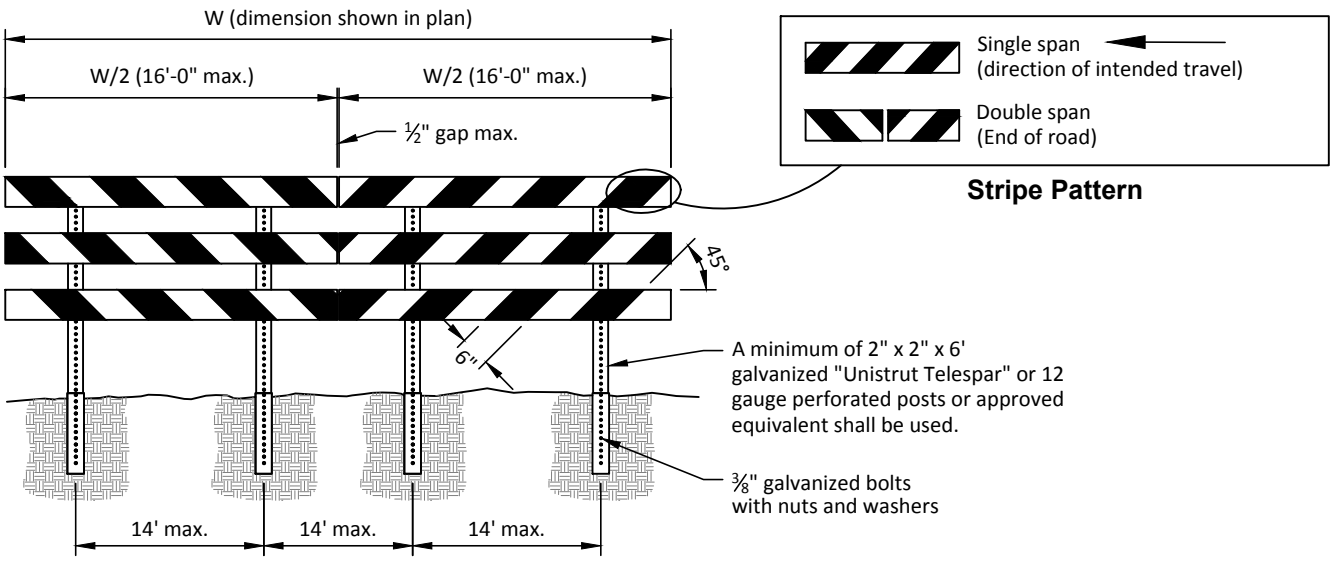
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 230-5

SCALE NTS

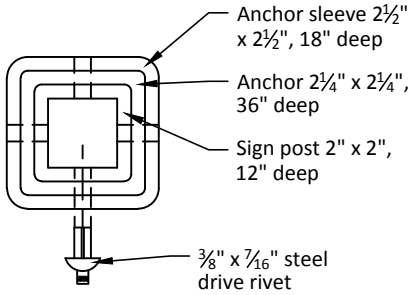
FILE NAME: COH-230-5.DWG

PLOT DATE: 3/7/2017 3:50 PM

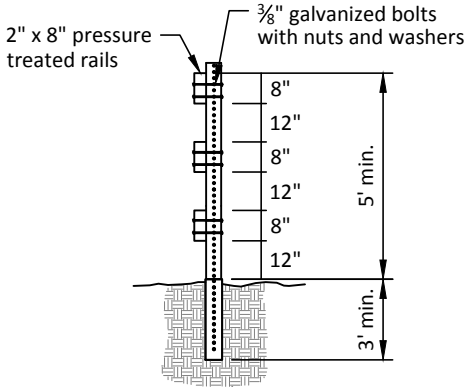


Stripe Pattern

Elevation



Typical Post Installation



End View

NOTES:

1. Rails to have alternating red and white stripes. All stripes shall be Type III reflective sheeting.
2. See MUTCD and the corresponding Oregon supplement.
3. 1" pan head sheet metal screws shall be used if sheet panels are to be fastened to the face of the cross boards.
4. All materials and workmanship shall be in accordance with the current *Oregon Standard Specifications for Construction*.

Hillsboro Public Works

BARRICADE - TYPE III, STEEL

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 230-6

SCALE NTS

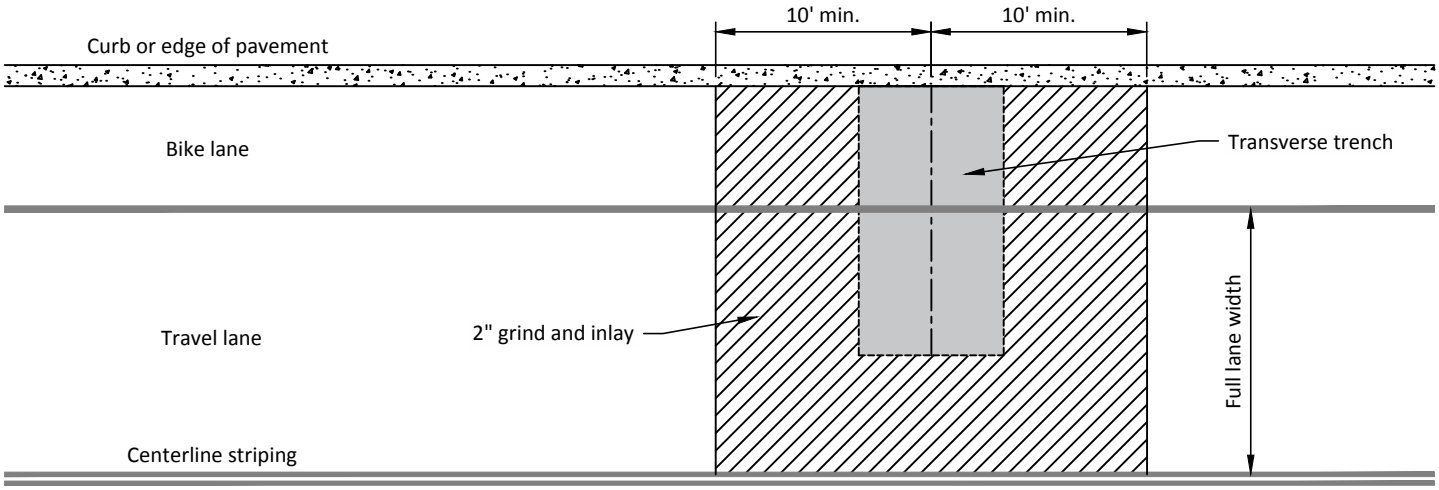
FILE NAME: COH-230-6.DWG

PLOT DATE: 3/7/2017 3:51 PM

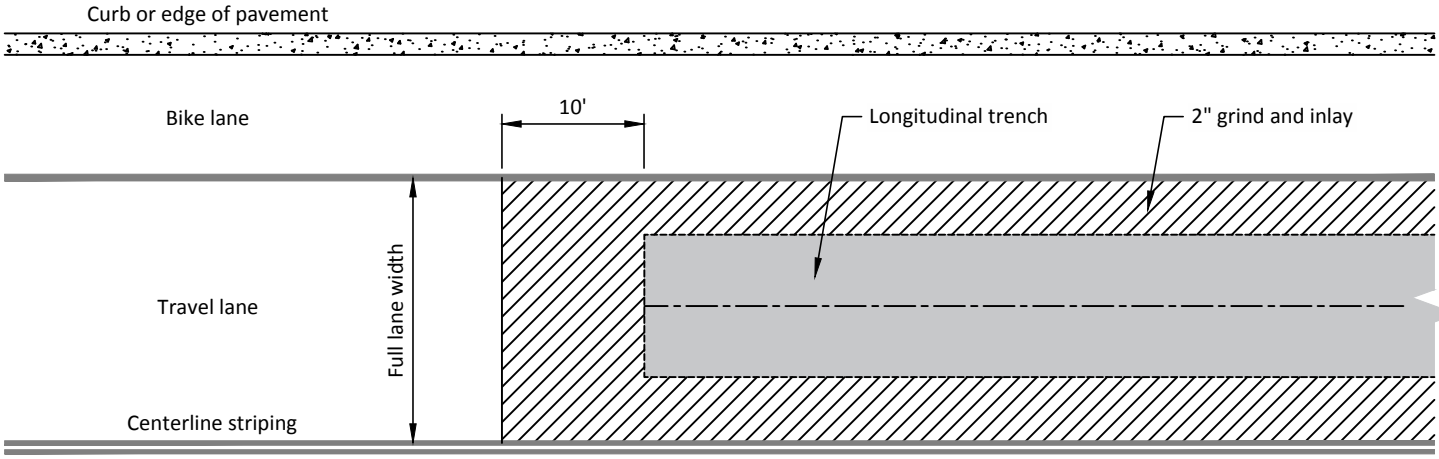
NOTES:

1. All letters to be black on a white Type III reflective background.

Hillsboro Public Works	STREET STUB	VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	STD. DRG. NO. 230-7 PROJECT NO. NTS
	FILE NAME: COH-230-7.DWG	PLOT DATE: 3/7/2017 3:52 PM	



Transverse Trench



Longitudinal Trench

NOTES:

1. Call for inspection prior to paving trench to discuss prep-work with Inspector.
2. Asphalt within trench area is to be replaced in 2" lifts back to previous grade.
3. Limits of grind described above must be at least 2" deep for entire area. Once this is complete, the final lift may be applied after inspection.
4. Any transverse cut into a lane requires a full lane width, 2" grind and inlay replacement (example: if the bike lane is cut into but not the travel lane, only the bike lane will require a full width 2" grind and inlay as shown).

Hillsboro Public Works

UTILITY CUTS
MORATORIUM STREETS

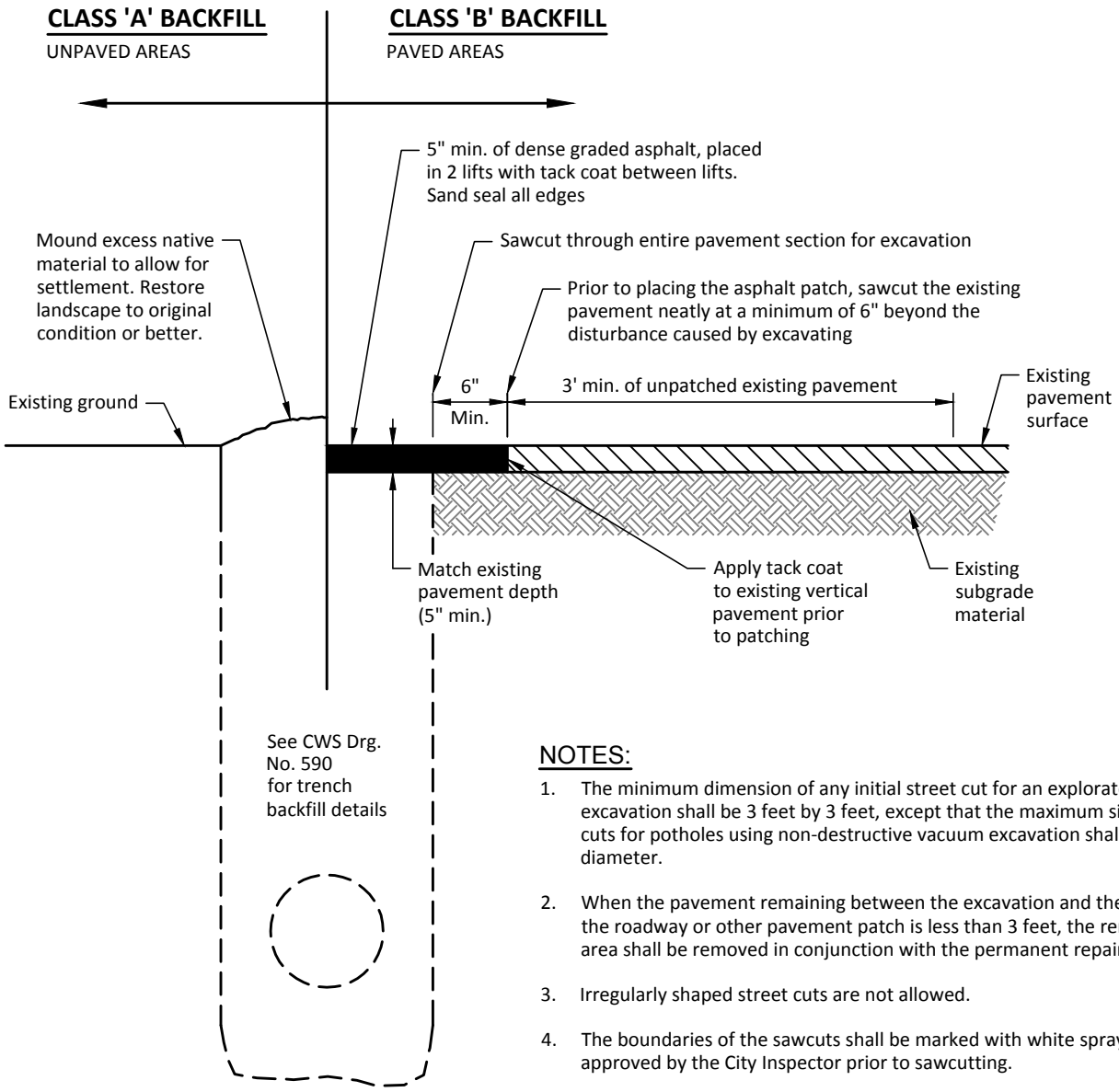
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 250-1

SCALE NTS

FILE NAME: COH-250-1.DWG

PLOT DATE: 3/7/2017 3:52 PM



NOTES:

1. The minimum dimension of any initial street cut for an exploratory excavation shall be 3 feet by 3 feet, except that the maximum size for street cuts for potholes using non-destructive vacuum excavation shall be 1' in diameter.
2. When the pavement remaining between the excavation and the edge of the roadway or other pavement patch is less than 3 feet, the remaining area shall be removed in conjunction with the permanent repair.
3. Irregularly shaped street cuts are not allowed.
4. The boundaries of the sawcuts shall be marked with white spray paint and approved by the City Inspector prior to sawcutting.
5. All existing pavement surfaces shall be swept clean of dirt, dust, and debris prior to patching.
6. All disturbed pavement markings shall be restored to match adjacent striping.
7. Spoil piles must be removed and the area must be cleaned and restored to like kind or better condition.

TYPICAL TRENCH AND SURFACE RESTORATION

SCALE: NTS

Hillsboro Public Works

TYPICAL TRENCH AND SURFACE RESTORATION

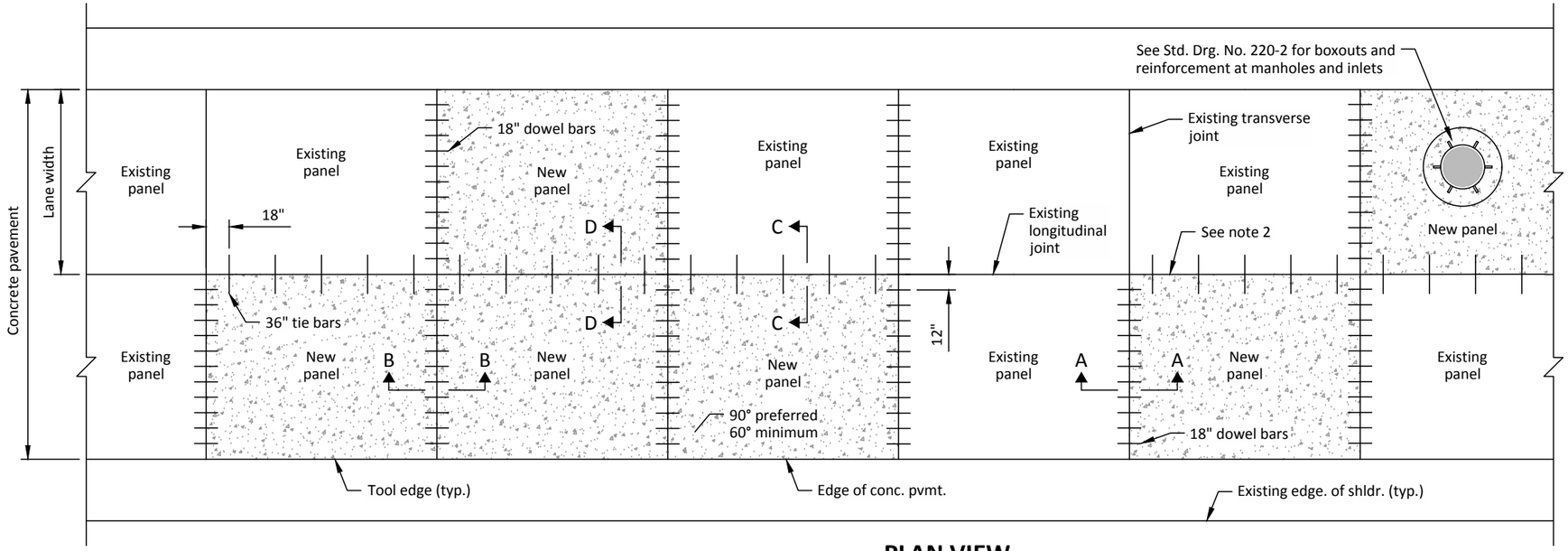
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 250-2

SCALE NTS

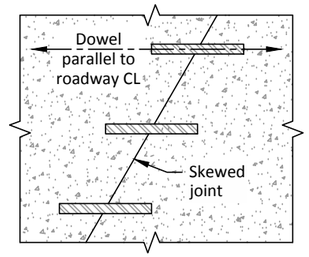
FILE NAME: COH-250-2.DWG

PLOT DATE: 3/7/2017 3:53 PM



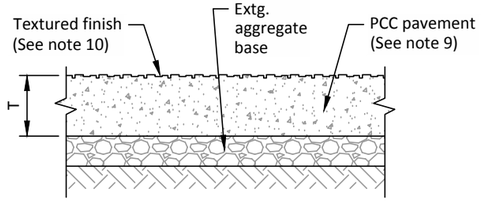
PLAN VIEW

SCALE: NTS



DOWEL AT SKEWED JOINT

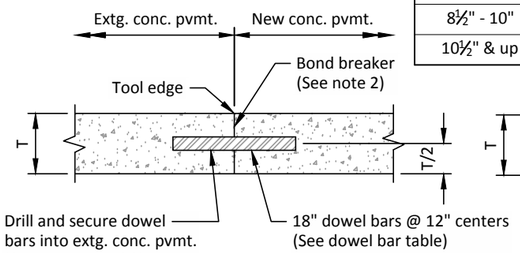
SCALE: NTS



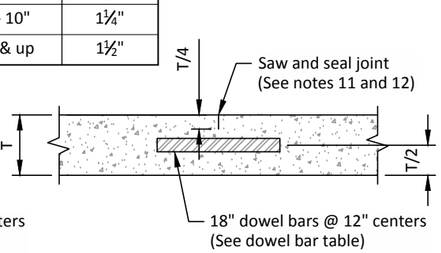
TYPICAL PAVEMENT SECTION

SCALE: NTS

Dowel Bar Table	
Pvmt. Thkn. (T)	Dowel Dia.
7" - 8"	1"
8½" - 10"	1¼"
10½" & up	1½"



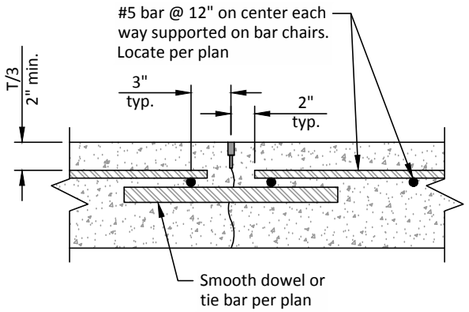
Section A-A
Construction Joint



Section B-B
Contraction Joint

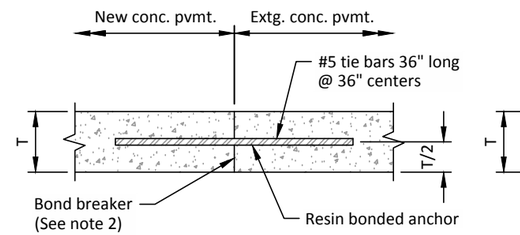
TRANSVERSE JOINT

SCALE: NTS

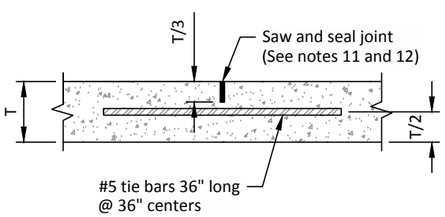


REINFORCEMENT GRID PLACEMENT NEAR JOINTS

SCALE: NTS



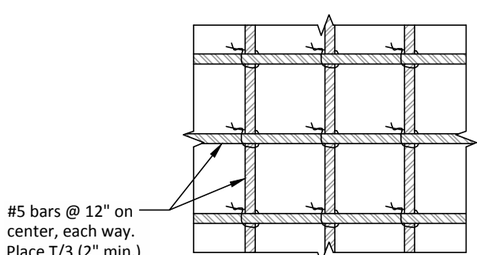
Section C-C
Contact Joint



Section D-D
Weakened Plane Joint

LONGITUDINAL JOINT

SCALE: NTS



REINFORCEMENT GRID

SCALE: NTS

NOTES:

1. Install tie bars along longitudinal joints between full panel replacement and existing concrete pavement. Tie bars are not installed between concrete pavement and ACP pavement.

2. Place 2 layers of #30 felt bond breaker meeting the requirements of ASTM D226, Type II at joints between panel replacement and existing panel.

3. Place new dowel bars between any existing (cut) dowel bars.

4. Center tie bars and dowel bars on joint.

5. Any repair of PCC pavement must be a full panel replacement.

6. Dowel holes should be 1/16 inch oversize in diameter and 9 inches to 9.5 inches deep for 18 inch long smooth dowels and 18 inches to 18.5 inches deep for 36 inch long tie bars. A hand held drill is not allowed.

7. Fill clean dowel hole with quick-set epoxy grout complying with ASTM C 881 Types IV or V, Grade 3, Classes B & C, suitable for anchoring smooth dowel bars in hardened concrete and on the ODOT QPL. Insert smooth fully greased dowels with grout retention ring into hole.

8. If the time frame designated for opening traffic is less than 72 hours after concrete placement, provide Class HES4000 - 1½ concrete designed to attain a minimum average compressive strength of 3,000 psi prior to allowing traffic on the concrete. Otherwise furnish Class 4000 - 1½ paving concrete.

9. The surface of the concrete shall have a textured finish using a steel-tine tool with 1/8 inch tines that will mark the finished concrete to a depth of 1/16 inch to 1/8 inch. Randomly space the markings from ½ inch to 1¼ inches as approved. Avoid overlaps of the texturing. Markings shall be transverse to the roadway centerline and full roadway width.

10. New interior longitudinal and transverse joints shall be sawcut as soon as the concrete has set enough to allow sawing without tearing or raveling.

11. The new saw cut transverse and longitudinal joints shall be filled with poured rubber-asphalt joint filler. The saw cut joint shall be flushed with water, vacuumed to remove cement slurry and dried before installing the joint filler.

12. Irregularly shaped panels, rectangular panels with an aspect ratio exceeding 1:1.25, and panels containing more than one utility structure (such as manholes, valves, etc.) shall be reinforced. See reinforcement grid details this sheet.

13. All tie bars and dowel bars shall be Grade 60 steel and shall be smooth, epoxy coated, circular, and greased.

SCALE: PLAN AS SHOWN
HORIZ.
VERT.
DRAWN: XXX
CHECKED: XXX

#	DATE	REVISION	BY	APP'D

Hillsboro Public Works

STANDARD DRAWING

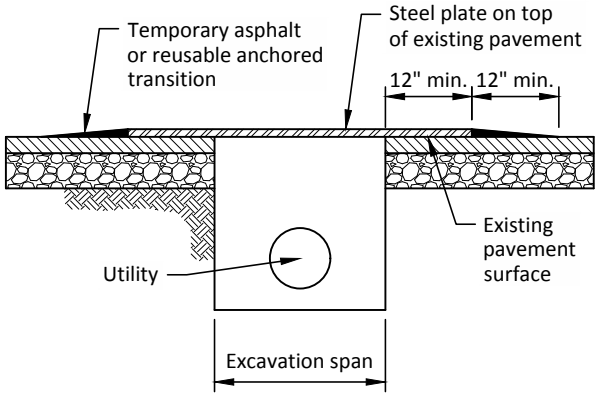
CONCRETE ROADWAY REPAIR

PROJECT NO.
STANDARD

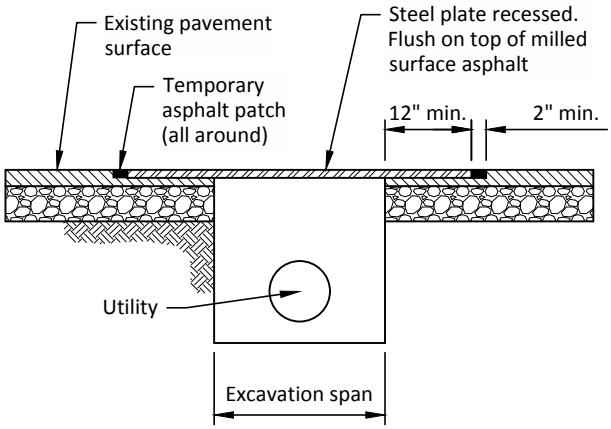
STD. DRG. NO.
250-3

PLOT DATE: 5/17/2017

FILE NAME: COH-250-3.DWG



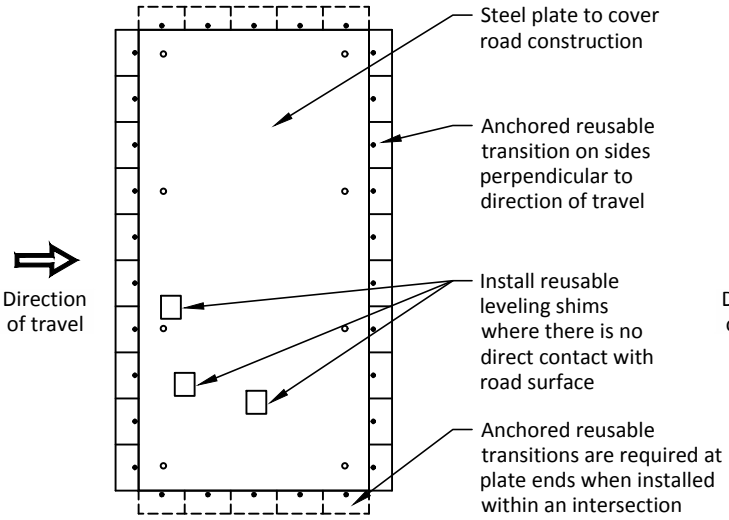
Type 1



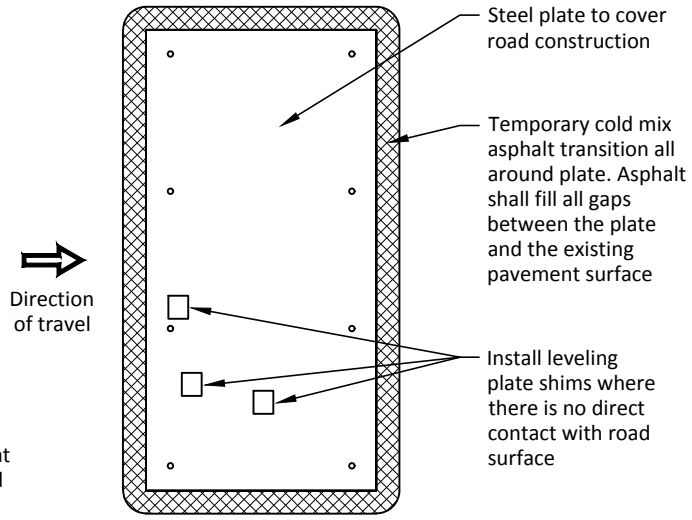
Type 2

STEEL PLATE INSTALLATION

SCALE: NTS



Reusable Anchored Transitions



Asphalt Transitions

TRANSITIONS

SCALE: NTS

NOTES:

1. Steel plates must be able to withstand H-20 traffic loading without any movement.
2. Steel plates shall be fabricated to meet ASTM A36 steel requirements.
3. When two or more plates are used, the plates shall be tack welded together at each corner to reduce or eliminate vertical movement.
4. Steel plates shall be installed to resist bending, vibrations, etc., under traffic loads and shall be anchored securely to prevent movement.
5. All steel plates shall be without deformation. The plates surface shall not deviate more than ¼ inch when measured with a 10-foot straight edge along the length of the plate.
6. Before steel plates are installed, the excavation shall be adequately shored to support the bridging and traffic loads.
7. Anchored reusable transitions to be "Plate Locks Road Plate Securing System" or equivalent.
8. Reusable leveling shims to be "Plate Shims" or equivalent.
9. Reusable leveling shims and transitions to be anchored using THD ¾" x 4" anchor and washer or equivalent.
10. Place W8-24 "STEEL PLATE AHEAD" warning sign 100 feet in advance of the steel plate location.
11. Local Roads with an ADT greater than 5,000 shall use Type 2 installation.
12. On all concrete roads, Type 1 installation shall be used with 1¼" min. thick plate.

W8-24

Steel Plate Installation	Road Classification	Posted Speed	Min. Plate Thickness
Type 1	Local Road & Alley	Less than 35 mph	1 inch
Type 2	Collector & Arterial	35 mph and greater	1¼ inch

Hillsboro Public Works

TEMPORARY STEEL PLATES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 250-4

PROJECT NO. NTS

FILE NAME: COH-250-4.DWG

PLOT DATE: 3/7/2017 3:57 PM

GENERAL SIGNING NOTES:

1. Contractor shall supply and install all signs, and is responsible for staking sign locations and obtaining utility locates for staked sign locations. Signs shall be located per typical sign location or as shown on the plans. It is the contractor's responsibility to verify the final street names with the County Survey Office at 503-846-8723 before ordering and installing street name signs.

2. All signing shall conform to the *Manual on Uniform Traffic Control Devices* and the City's permanent signing legend. Spacing between letters, words, numbers, and/or symbols shall be in conformance with the *Standard Alphabets for Highway Signs* in the MUTCD.

   A. FOR LOCAL STREET INTERSECTIONS:
   Eight (8) inch 0.100 inch flat blade aluminum blanks.

   LETTERING: Four (4) inch initial uppercase with (3) inch lowercase Series D
   PREFIXES: Three (3) inch uppercase Series D
   SUFFIXES: Three (3) inch initial uppercase with (2.25) inch lowercase Series D
   SUPERSCRIPT FOR NUMERICAL STREET NAMES: Two (2) inch uppercase Series D

   B. FOR COLLECTOR AND ARTERIAL STREET INTERSECTIONS (<40 mph):
   Twelve (12) inch 0.100 inch flat blade aluminum blanks.

   LETTERING: Six (6) inch initial uppercase with (4.5) inch lowercase Series D
   PREFIXES: Four (4) inch uppercase Series D
   SUFFIXES: Four (4) inch initial uppercase with (3) inch lowercase Series D
   SUPERSCRIPT FOR NUMERICAL STREET NAMES: Three (3) inch uppercase Series D

   C. FOR MULTI-LANE COLLECTOR AND ARTERIAL STREET INTERSECTIONS (>40 mph):
   Eighteen (18) inch 0.125 inch flat blade aluminum blanks.

   LETTERING: Eight (8) inch initial uppercase with (6) inch lowercase Series D
   PREFIXES: Six (6) inch uppercase Series D
   SUFFIXES: Six (6) inch initial uppercase with (4) inch lowercase Series D
   SUPERSCRIPT FOR NUMERICAL STREET NAMES: Four (4) inch uppercase Series D

   D. FOR SIGNALIZED INTERSECTIONS:
   Twenty one (21) inch 0.125 inch flat blade aluminum blanks, mounted to mast arm or strain pole for span wire signal systems.

   LETTERING: Twelve (12) inch initial uppercase with (9) inch lowercase Series D
   PREFIXES : Eight (8) inch uppercase Series D
   SUFFIXES: Eight (8) inch initial uppercase with six (6) inch lowercase Series D
   SUPERSCRIPT FOR NUMERICAL STREET NAMES: Six (6) inch uppercase Series D

3. Use ODOT standards for mast arm street name sign spacing.

4. COMMON ABBREVIATIONS:

Ave = Avenue	Ln = Lane	Rd = Road
Blvd = Boulevard	Lp = Loop	St = Street
Cir = Circle	Pkwy = Parkway	Ter = Terrace
Ct = Court	Pl = Place	Way = Way
Dr = Drive		

5. POSTS:

   A. A 2 X 2 inch X 10 foot (min.) galvanized "Unistrut Telespar" 12 gauge perforated posts or approved equivalent shall be used.

   B. A 2 inch X 2 inch X 12 foot (min.) galvanized "Unistrut Telespar" 12 gauge perforated posts or approved equivalent shall be used when a combination of signs is more than 36 inches in height. Sign combinations and minimum sign mounting height shall determine post length.

   C. Large signs may require larger posts than the minimums shown above. See ODOT Std. Drg. TM681 for additional post sizing requirements. (3 second gust wind speed = 95 MPH)

   D. No wood, round metal, or other type of post shall be used.

6. All signs shall be aluminum. Plywood and polyplate are not allowed.

7. Contractor is required to submit shop drawings for City approval prior to fabrication of all non-standard drawings.

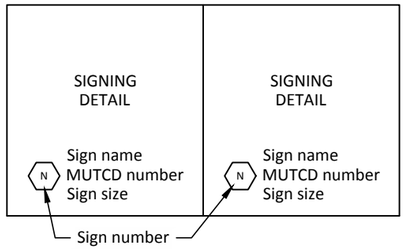
8. Minimum size for speed limit signs shall be 30 inch x 36 inch.

SIGNING CALLOUT NOTES

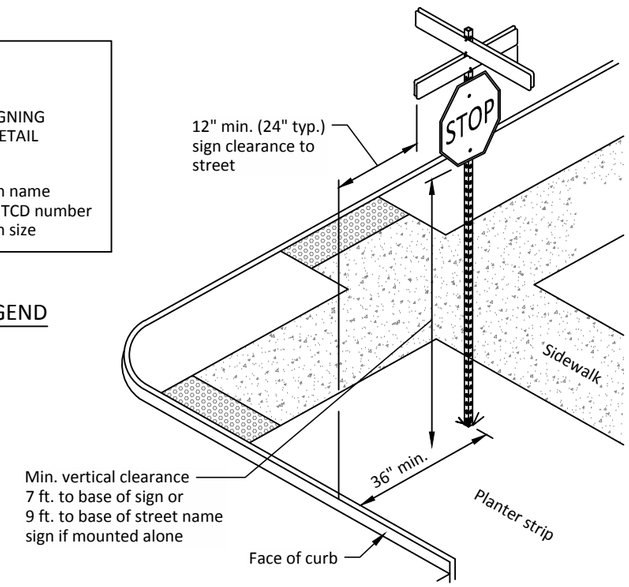
- N — Install new sign
- N / M — Install new sign (N) on new (M) support
- RXN — Remove existing sign (N)
- RXN / M — Remove existing sign (N) and (M) support
- RIN / M — Reinstall sign (N) on new (M) support
- EXN — Maintain and protect existing sign (N) and support
- RIN — Reinstall existing sign on existing support

N = Sign number
M = Materials, options are:
S = Steel "Telespar"

Signs shown with broken borders are existing



EXAMPLE SIGNING LEGEND

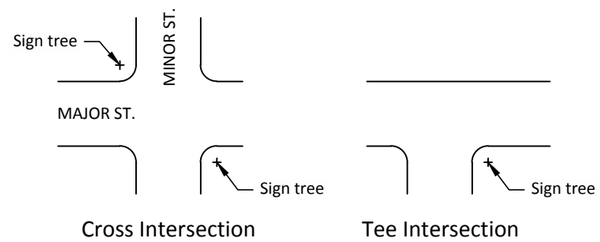


TYPICAL STREET SIGN PLACEMENT

SHEETING MATERIALS:

School warning signs:	Diamond grade florescent yellow/green reflective sheeting, Type IX
Overhead signing: (including street name signs)	Diamond grade reflective sheeting, Type IX
All other signs (post mounted):	Hi-intensity prismatic reflective sheeting, Type IV

One manufacturer's sheeting splice is permitted per sign. Contractor splices are not allowed. Splice shall be horizontal with the upper section overlapping the lower by a min. ⅜ inch.



TYPICAL INTERSECTION SIGN PLACEMENT

HILLSBORO "H" LOGO NOTES:

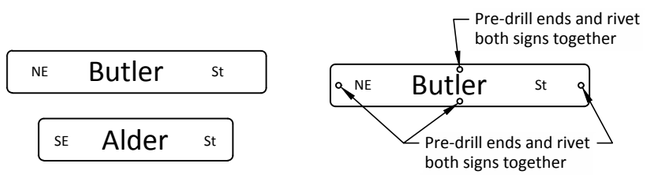
1. All street name signs at collector and arterial roadway intersections shall bear the City of Hillsboro "H" logo.

2. City of Hillsboro "H" logo diameter shall match the size of the initial uppercase letter of the street name.

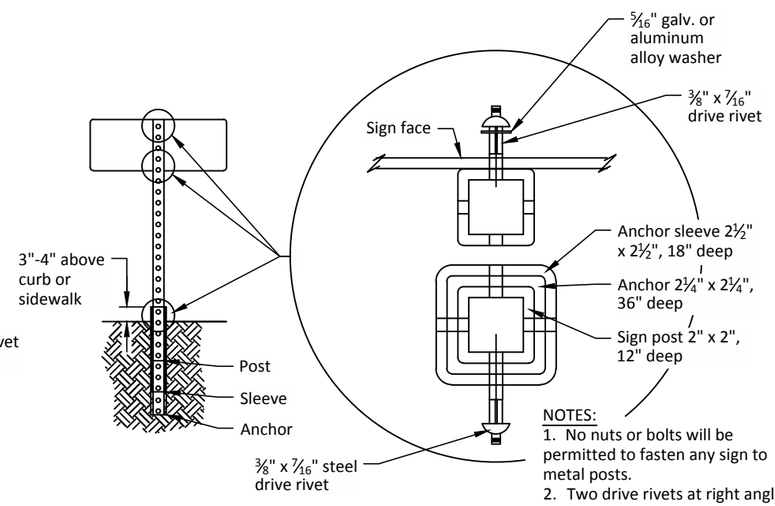
3. City of Hillsboro "H" logo shall be white hi-intensity prismatic reflective sheeting, Type IV.

HILLSBORO "H" LOGO

HILLSBORO "H" LOGO LAYOUT



TYPICAL STREET NAME SIGN TEXT LAYOUT



TYPICAL SIGN POST INSTALLATION

SCALE: PLAN AS SHOWN; HORIZ.; VERT.; PROFILE; DRAWN: XXX; CHECKED: XXX

#	DATE	REVISION	BY	APP'D

Hillsboro Public Works

STANDARD DRAWING

SIGNS AND SIGNPOSTS

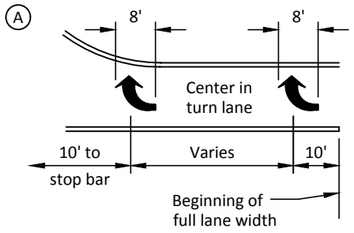
PLOT DATE: 8/7/2018

PROJECT NO. STANDARD

STD. DRG. NO. 320-1

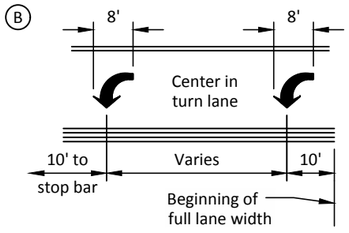
FILE NAME: COH-320-1.DWG

(A)



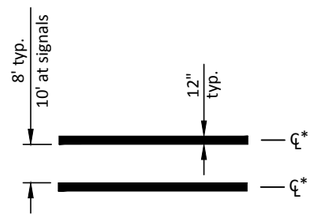
RIGHT TURN LANE MARKINGS
See MUTCD for details.

(B)



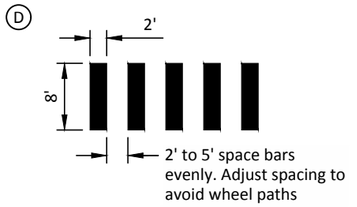
LEFT TURN LANE MARKINGS
See MUTCD for details.

(C)



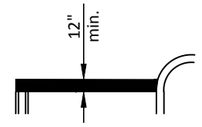
CROSSWALK
Space two 12" white lines as shown on plans

(D)



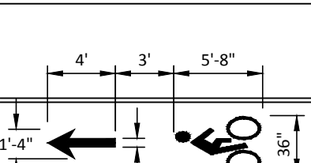
HIGH VISIBILITY CROSSWALK
Place white longitudinal bars as shown on plans. Space lines to avoid wheel paths.

(E)



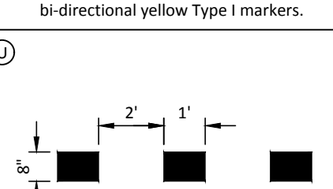
STOP BAR
12" wide white line. See note 5 for placement information.

(F)



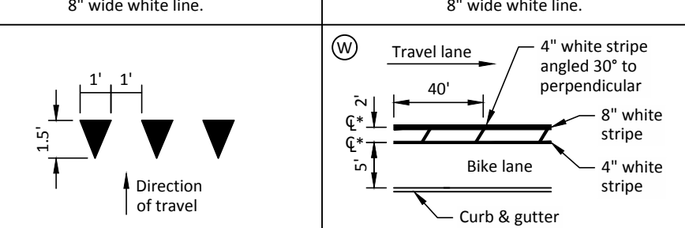
THRU AND TURN LANE MARKINGS
See MUTCD for details.

(G)



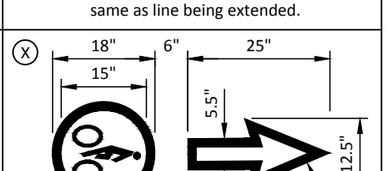
"ONLY" PAVEMENT LEGEND
Center "ONLY" legend between turn or thru arrows. See MUTCD for details.

(H)



RAISED MEDIAN STRIPE
See MUTCD for details

(I)



TURN LANE LINE
8" white line with mono-directional crystal Type I markers (white)

(J)

MEDIAN NOSE
Two 4" yellow lines with bi-directional yellow Type I markers.

(K)

RAILROAD CROSSING
Shall be white and installed per detail. Place per P.U.C. directions.

(L)

TWO WAY LEFT TURN STRIPE
4" yellow lines with Type I bi-directional raised pavement markers. Outside line is solid. Inside at 10'/30' pattern.

(M) X

SKIP CENTER LINE
4" yellow or white line with Type I bi-directional yellow or white/red raised pavement markers.

(N)

MEDIAN STRIPE
Two 4" yellow lines with Type I bi-directional yellow raised pavement markers.

(O) X

FOG LINE
4" yellow or white line as shown on plans.

(P)

CENTER LINES
Two 4" yellow lines with bi-directional yellow Type I markers.

(Q)

BIKE LANE LINE
8" wide white line.

(R)

BIKE LANE SKIP LINE
8" wide white line.

(S) X

PAVEMENT MARKING EXTENSIONS THRU INTERSECTIONS
White or yellow line. Width and color same as line being extended.

(T)

BICYCLE LANE MARKING
Shall be white and installed per detail.

(U)

WIDE DOTTED WHITE LANE EXTENSION
8" X 12" white dots spaced 2' apart across roundabout entrance arc.

(V)

YIELD LINE
1' X 1.5' triangles spaced 1' apart perpendicular to the direction of travel.

(W)

BICYCLE BUFFER LANE
4" wide white stripe and 8" wide white stripe parallel to traffic with 4" white stripe angled 30° every 40 ft.

(X)

OFF STREET BIKE MARKING
Green to be Pantone Color #375.

PAVEMENT MARKING NOTES:

1. All pavement markings shall conform to this legend and the most current edition of the MUTCD, with Oregon supplement.
2. This legend may have more restrictive requirements than the MUTCD. Where there is a conflict between this legend and the MUTCD, the MUTCD requirements shall apply.
3. Pavement marking tape shall be rolled-in at the time of paving for new asphalt pavement and applied to the surface (not grooved or inlaid) for all other pavement types.
4. Painted markings, foil back tape, and flexible pavement markers (stick-and-stomps) are not allowed.
5. Locate stop bars 10' back of the extended fog line, edge of pavement, or curb face. Locate stop bars behind curb ramps when present. Verify sight distance.
6. Locate crosswalks as per sidewalk ramp locations of 5' back of extended fogline, edge of pavement or curb face. Striping for crosswalks shall conform to current ADA requirements.
7. Removal of existing striping is to be determined in the field and as directed by the City.
8. All materials shall conform to the most current ODOT specifications.
9. The Engineer must obtain authorization for placement of "RAILROAD CROSSING" markings prior to plan approval. Authorization shall be obtained from the ODOT Rail Safety Section.
10. Prior to installation, Contractor shall submit the materials to the City for approval.
11. All transverse pavement markings (bars and legends) shall have intermixed reflective elements and factory installed crushed glass or aggregate on the surface (Type HS "high skid").
12. All pavement markings shall be "wet weather" type.
13. All longitudinal pavement markings (stripes) applied to concrete shall be "contrast" type with matte black borders to improve visibility. Stripe width (white or yellow) shall not be reduced, the black border is in addition to the stripe width shown.

X Subscript for pavement marking. Denotes color. (Y) yellow or (W) white.

* Lane marking dimension location at centerline of striping unless noted otherwise.

PVMT. MARKING MATERIALS	
SURFACE TYPE	MATERIAL
Existing asphalt	Thermoplastic
Existing concrete	Pvmt. marking tape
New asphalt	Pvmt. marking tape
New concrete	Pvmt. marking tape

SCALE: AS SHOWN | PLAN | HORIZ. | VERT. | DRAWN: XXX | CHECKED: XXX

#	DATE	REVISION	BY	APP'D

Hillsboro Public Works

STANDARD DRAWING

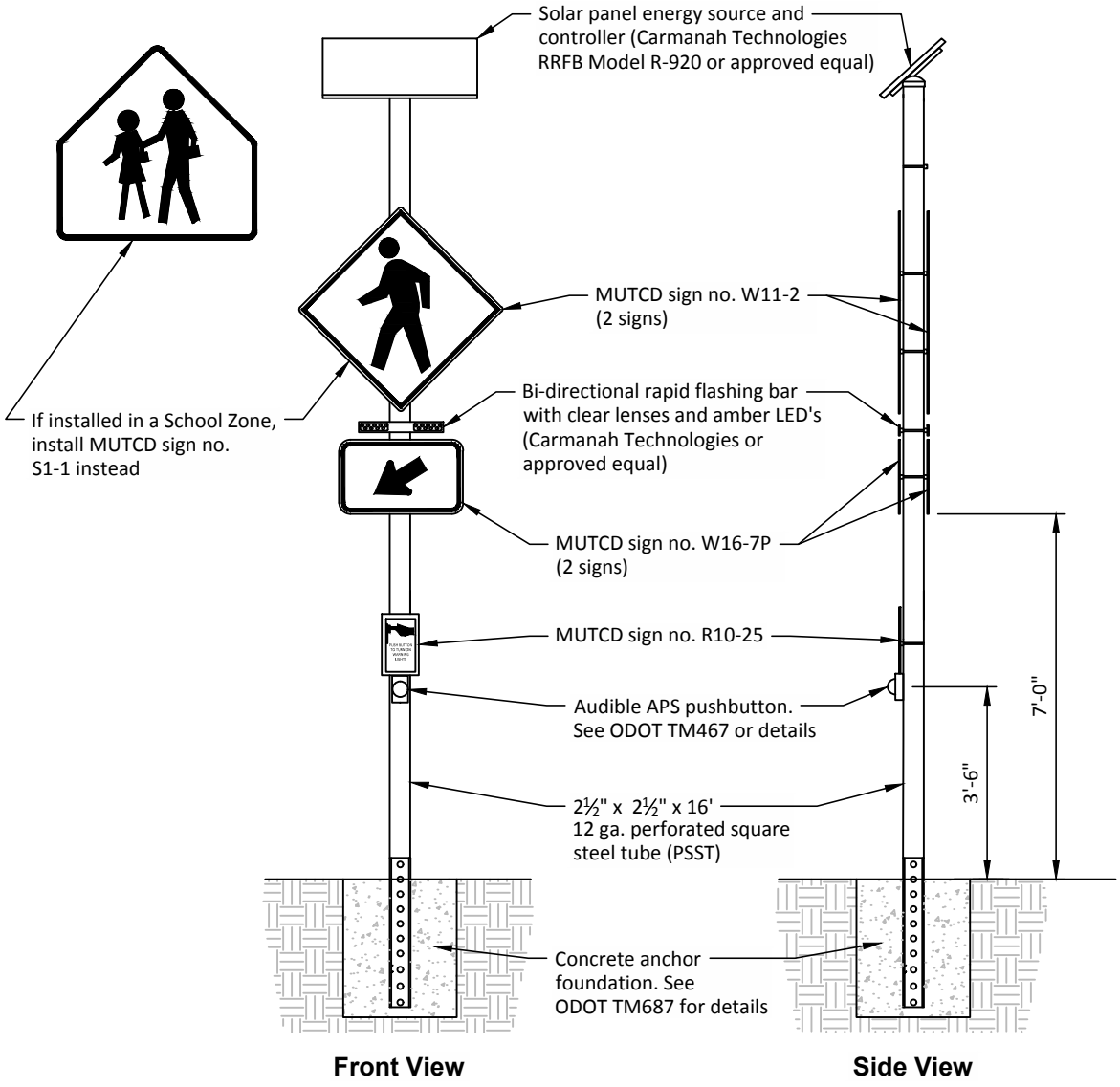
PERMANENT PAVEMENT MARKINGS

PLOT DATE: 3/7/2017

PROJECT NO. STANDARD

STD. DRG. NO. 330-1

FILE NAME: COH 330-1.DWG



RECTANGULAR RAPID FLASHING BEACON ASSEMBLY DETAIL

SCALE: NTS

NOTES:

1. Rectangular Rapid Flashing Beacon (RRFP) crosswalk system shall comply with current MUTCD and FHWA Memorandum dated July 16, 2008, granting interim approval for the optional use of RRFB as warning beacons under limited conditions.
2. RRFB assembly shall be RRFB Model R920 Series as provided by Carmanah Technologies or approved equal.
3. Standard (non-school) crossings shall use standard yellow signs. School crossings shall use fluorescent yellow/ green signs.
4. See current MUTCD for sign size and advance warning requirements.
5. See Std. Drg. No. 320-1 for additional signing details.

Hillsboro Public Works

RECTANGULAR RAPID FLASHING BEACON (RRFB)

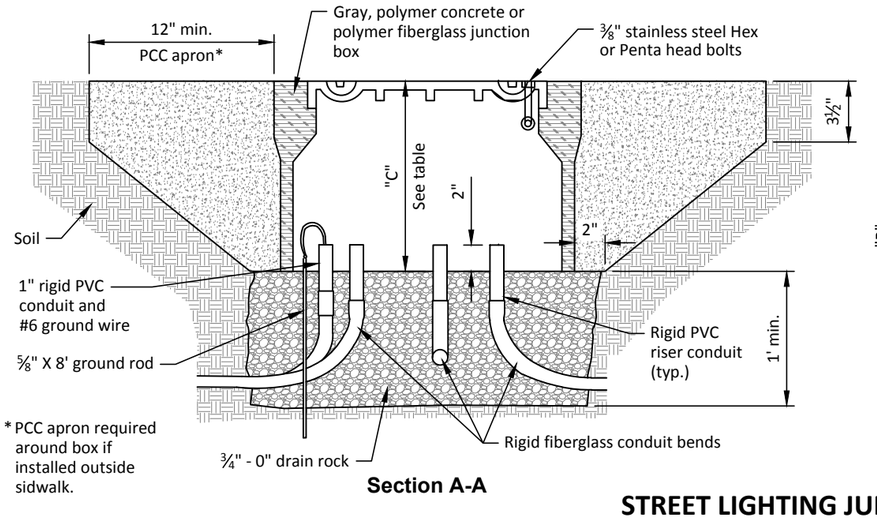
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 340-1

SCALE NTS

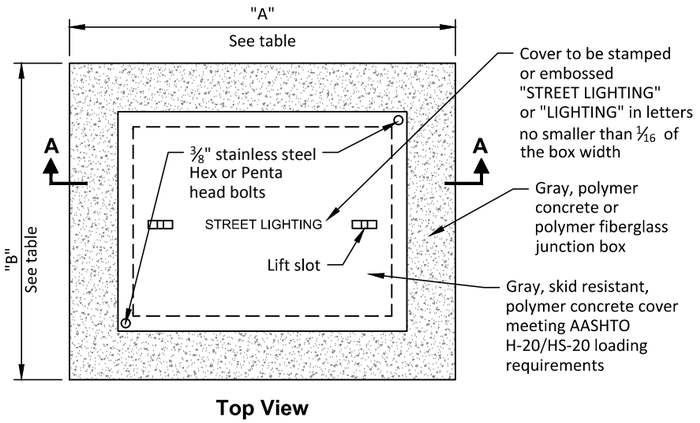
FILE NAME: COH-340-1.DWG

PLOT DATE: 3/7/2017 1:36 PM



Section A-A

* PCC apron required around box if installed outside sidwalk.



Top View

STREET LIGHTING JUNCTION BOX

SCALE: NTS

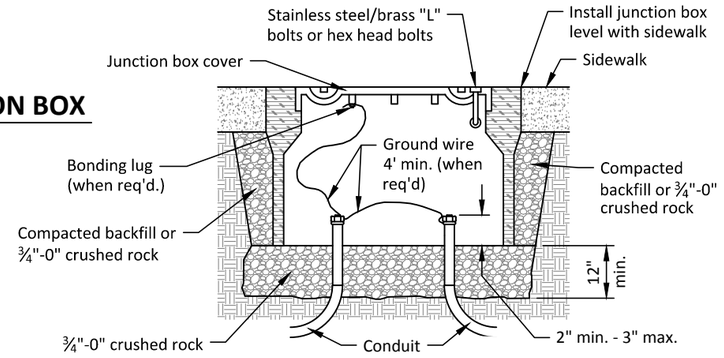
APPROVED J-BOXES:

1. Newbasis
2. Quazite (Hubbell)
3. Oldcastle/Carson Industries
4. Highline
5. Armorcast
6. CDR (Electrimold)
7. or approved equal

NOTES:

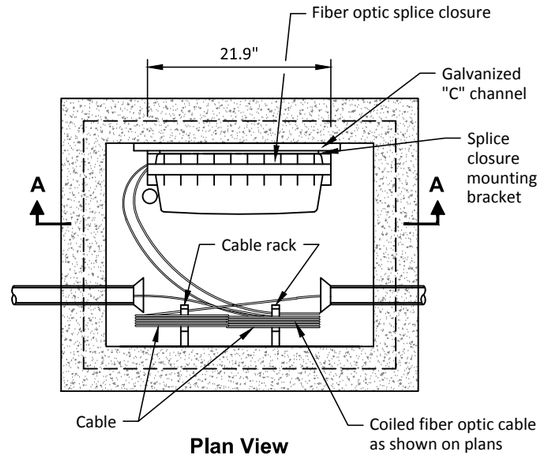
1. Illumination circuit wires are not shown. See illumination plans.
2. Metal pole grounding required only at J-box located near illumination poles.
3. Grounding rod and wire shall be installed inside concrete junction box.

Type	"A" Length	"B" Width	"C" Depth	Comments
JBH-1	24"	13"	18"	Max. 2-2" conduits and 2-1" conduits
JBH-2	30"	17"	18"	Max. 6-2" conduits and 2-1" conduits

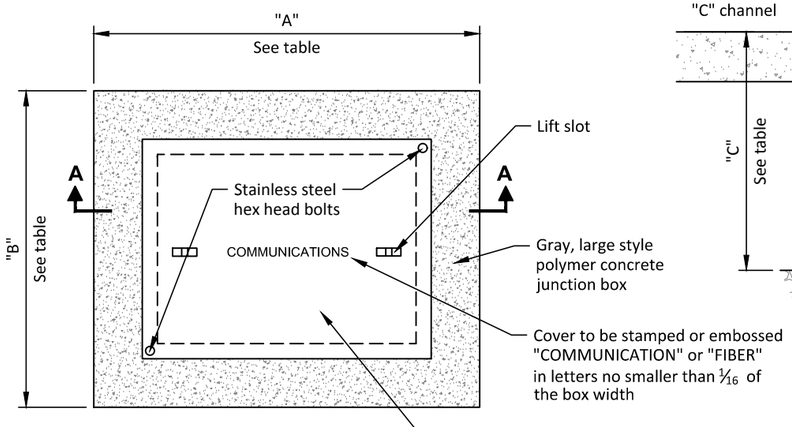


Installation In Sidewalk or At Back of Curb

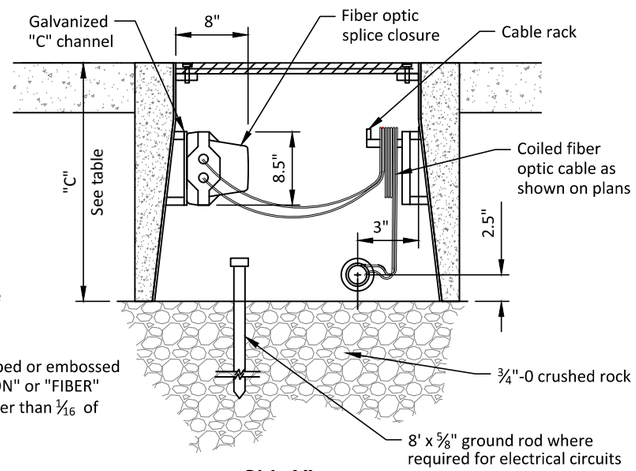
Type / Application	"A" Length	"B" Width	"C" Depth
At intersections	36"	36"	36"
Along the communication path used for pulling and storage	36"	24"	24"



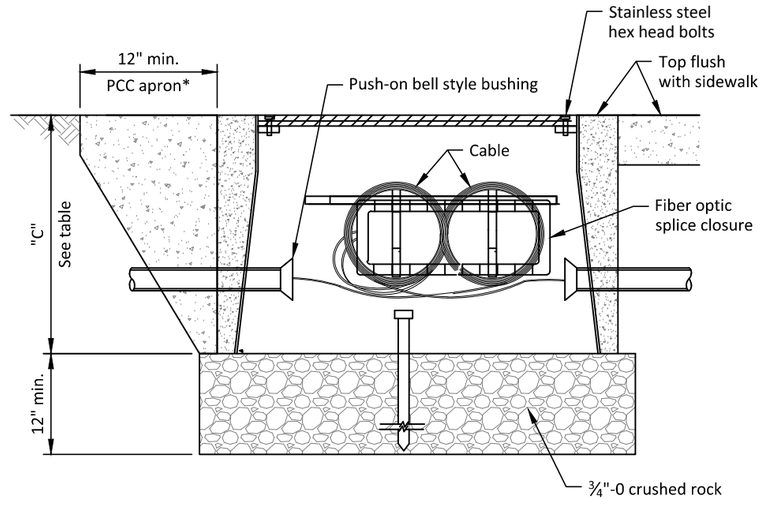
Plan View



Top View



Side View



* PCC apron required around box if installed outside sidwalk.

Section A-A

COMMUNICATIONS JUNCTION BOX

SCALE: NTS

SCALE: PLAN AS SHOWN | HORIZ. | VERT. | DRAWN: XXX | CHECKED: XXX

PROFILE

#	DATE	REVISION	BY	APP'D

Hillsboro Public Works

STANDARD DRAWING

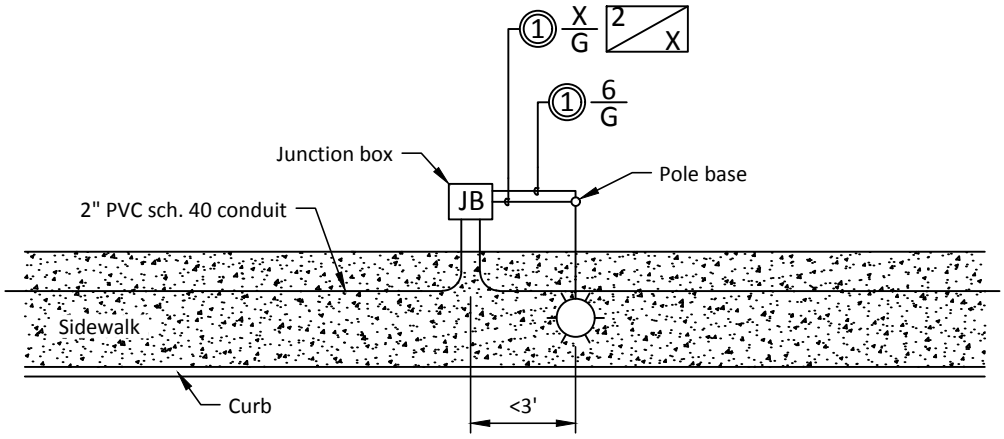
JUNCTION BOXES

PLOT DATE: 7/10/2017

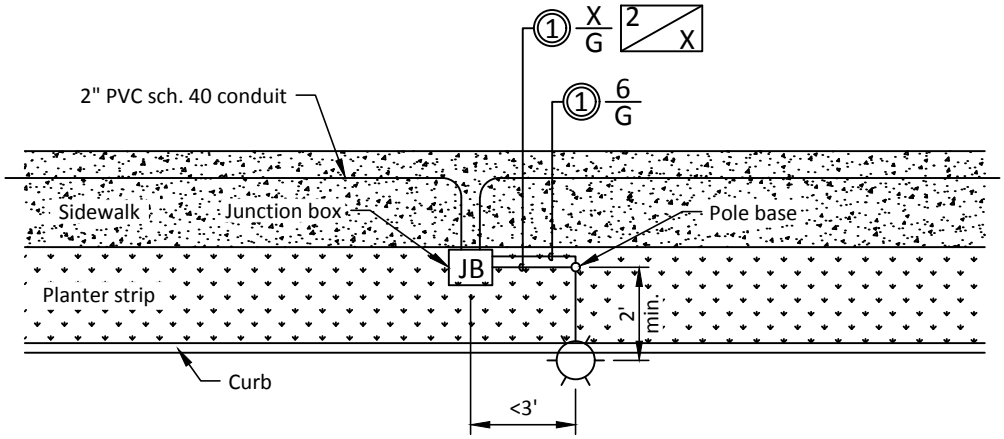
PROJECT NO.
STANDARD

STD. DRG. NO.
350-1

FILE NAME: COH-350-1.DWG



Curb-tight Sidewalk



Sidewalk with Planter Strip

TYPICAL LIGHT POLE CONNECTION TO JUNCTION BOX

SCALE: NTS

Hillsboro Public Works

STREET LIGHT POLE CONNECTION TO JUNCTION BOX

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 350-2

SCALE NTS

FILE NAME: COH-350-2.DWG

PLOT DATE: 1/19/2017 8:54 AM

CITY FIBER GENERAL NOTES:

1. Distribution line conduit to be 2" diameter orange HDPE unless otherwise approved.
2. Drop line conduit to be 1.5" diameter gray HDPE unless otherwise approved.
3. Tracer wire to be #16 AWG THWN with orange jacket and blue tracer. Install tracer wire in conduit, extend 2 feet beyond conduit end, and install wire nut.
4. Fiber optic junction box to be:
   Manufacturer: Armorcast
   Number: A6001640HDAPCX24 (traffic rated)
   Number: A6001640APCX24 (non-traffic rated)
   (Unless otherwise approved)
5. Fiber optic splice vault to be:
   Manufacturer: Pencell (Hubbell)
   Number: PEM-2436-SPLIT
   (Unless otherwise approved)
6. Underground warning tape to be orange, 6 inch wide, 4 mil thick, polyethylene film printed with "CAUTION BURIED FIBER OPTIC LINE BELOW."
7. Pull string to be installed in all conduit.
8. Fiber optic cable to be installed by others.
9. 2" City fiber distribution line conduit shall be installed along street frontage in the Public Utility Easement (if available) or within street right-of-way for all residential and commercial construction projects.

Hillsboro Public Works

CITY FIBER GENERAL NOTES

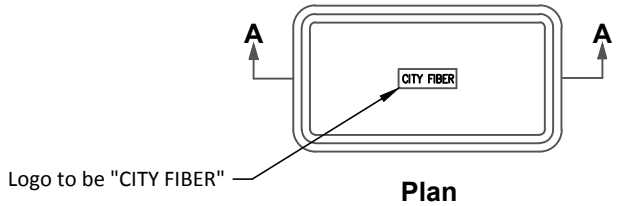
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 380-1

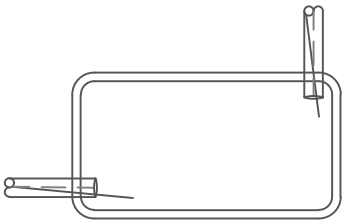
SCALE NTS

FILE NAME: COH-380-1.DWG

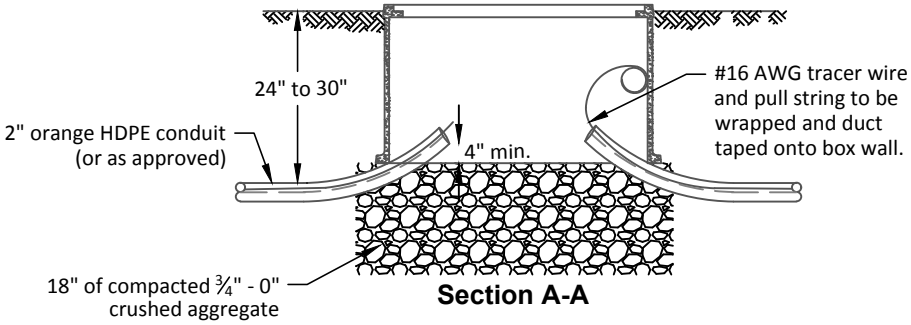
PLOT DATE: 7/17/2018 1:36 PM



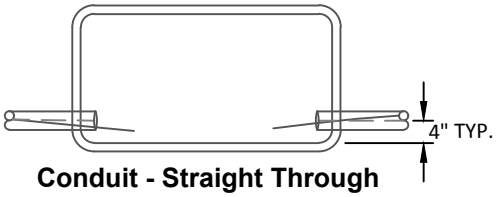
Plan



Conduit - Direction Change



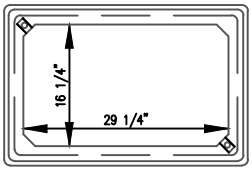
Section A-A



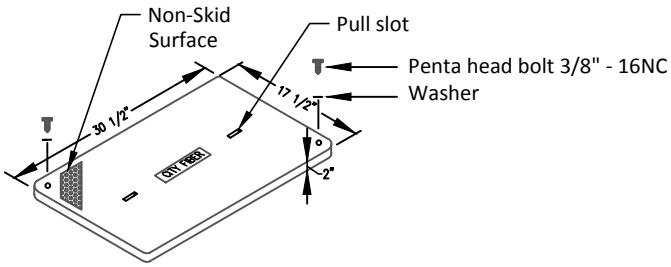
Conduit - Straight Through

INSTALLATION NOTES:

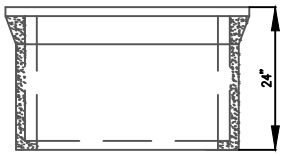
1. Conduit shall sweep into junction box from 24" to 30" depth of cover and shall be 4" away from box wall.
2. Conduit ends shall be swept up a minimum of 4" and capped or covered to prevent debris from entering.
3. Junction box shall be installed on 18" minimum layer of compacted ¾" - 0" crushed aggregate.
4. Junction box shall be installed parallel and perpendicular to adjacent concrete structures unless otherwise approved.
5. Pull string and #16 AWG tracer wire to be installed by contractor.
6. Fiber cable by others.



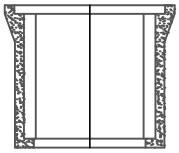
Plan



Cover



Elevation



End

BOX NOTES:

1. Junction box in areas subject to vehicle traffic shall be fiberglass reinforced polymer concrete Armorcast A6001640HDAPCX24 unless otherwise approved. Box shall be 20K load rated and meet ANSI tier 22 loading specifications.
2. Junction box in areas not subject to vehicle traffic and outside paved areas shall be Armorcast A6001640APCX24 unless otherwise approved. Box may be 10K load rated and meet ANSI tier 8 loading specifications.
3. Material to be fiberglass reinforced polymer concrete and have the following mechanical properties: compressive strength - 11,000 PSI ASTM C-109, tensile strength - 1,700 PSI ASTM C-496, flexural strength - 7,500 PSI ASTM D-790.
4. Boxes shall be open bottom and stackable for extra depth.

Hillsboro Public Works

CITY FIBER JUNCTION BOX

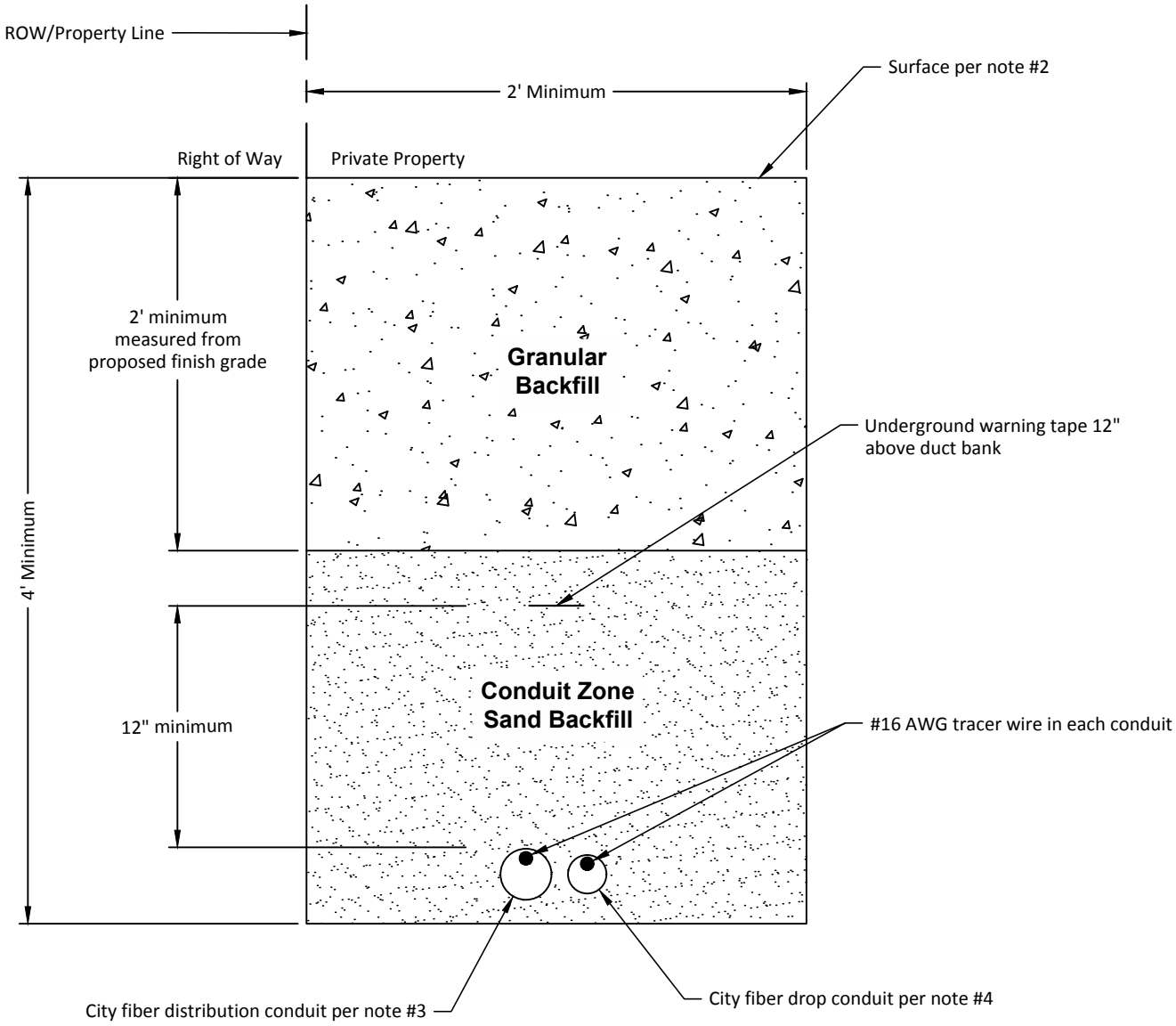
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 380-2

SCALE NTS

FILE NAME: COH-380-2.DWG

PLOT DATE: 7/17/2018 1:32 PM



CITY FIBER OPTIC TRENCH

SCALE: NTS

This section is schematic and for informational purposes.

NOTES:

1. Utilities in joint trench vary by project. See plans for locations and sizes of conduit for each utility.
2. Surfacing of paved areas shall comply with City of Hillsboro Standard Drawing 250-2.
3. Distribution line conduit shall be 2" diameter orange HDPE pipe.
4. Drop line conduit shall be 1.5" diameter gray HDPE pipe.
5. Use spacers to maintain conduit separation in common trench.

Hillsboro Public Works

CITY FIBER TRENCH DETAIL

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 380-3

SCALE NTS

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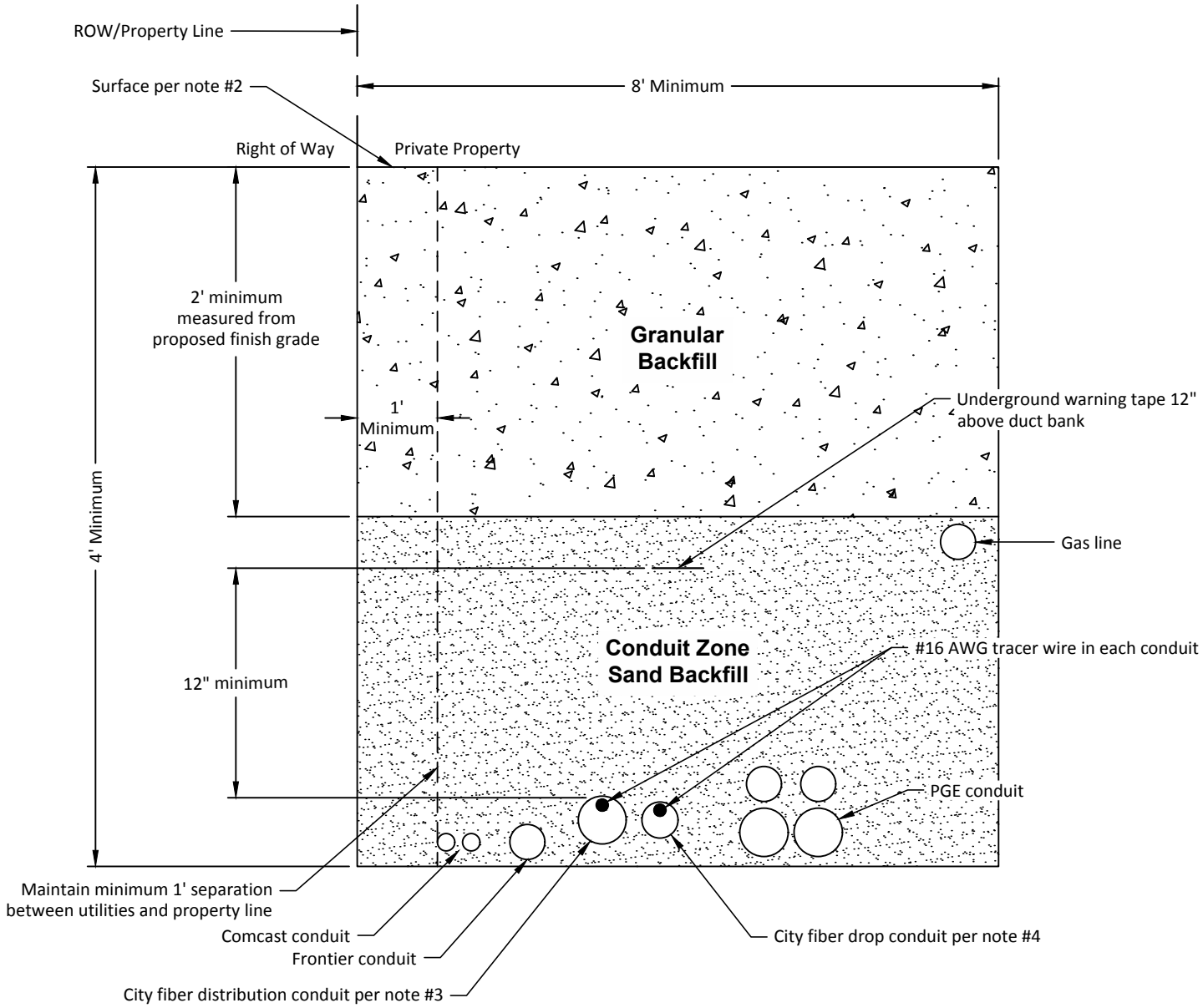
PLOT DATE: 7/17/2018 1:30 PM



JOINT UTILITY TRENCH

SCALE: NTS

This section is schematic and for informational purposes.

NOTES:

1. Utilities in joint trench vary by project. See plans for locations and sizes of conduit for each utility.
2. Surfacing of paved areas shall comply with City of Hillsboro Standard Drawing 250-2.
3. Distribution line conduit shall be 2" diameter orange HDPE pipe.
4. Drop line conduit shall be 1.5" diameter gray HDPE pipe.
5. Use spacers to maintain conduit separation in common trench.

Hillsboro Public Works

CITY FIBER JOINT UTILITY TRENCH

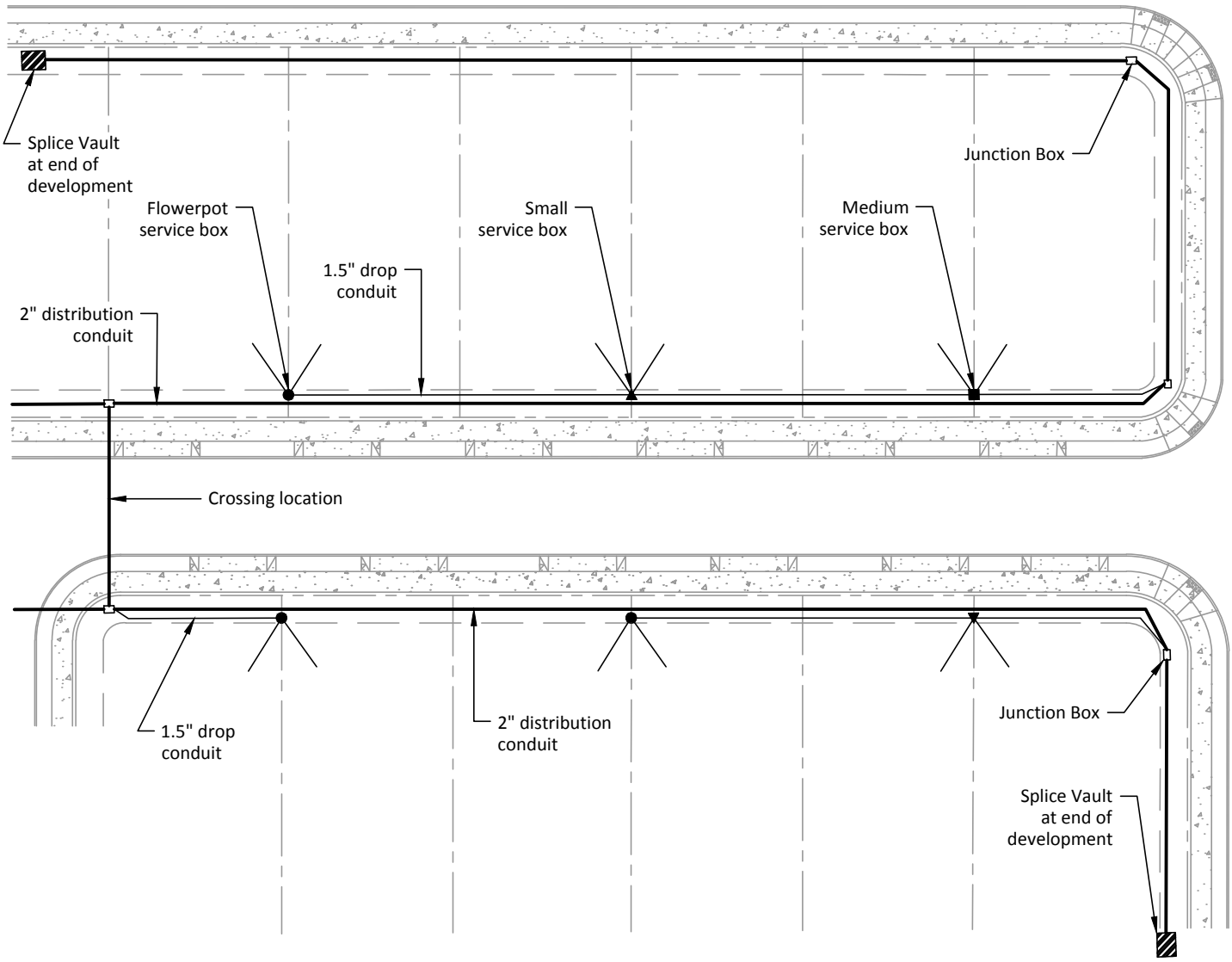
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 380-4

SCALE NTS

FILE NAME: COH-380-4.DWG

PLOT DATE: 7/17/2018 1:24 PM



SITE LAYOUT

SCALE: NTS

NOTES:

1. Fiber optic plan to be revised per PGE plan requirements. Contractor/Engineer to submit updated plans.
2. Maximum of 4 conduit lines to be laid in each direction from junction box.
3. Junction boxes shall be placed at intersection corners to facilitate future and proposed crossings.
4. Flowerpot service boxes may be used to serve a maximum of two premises at the end of a line.
5. Small service boxes may be used to serve one other service box in a series.
6. Medium service boxes may be used to serve two or more other service boxes in a series.
7. Splice vaults shall have a split lid to accommodate the mounting of a splitter cabinet on the fixed portion of the split lid.

LEGEND:

- ● Flowerpot service box - 10" diam.
- ▲ Small service box - 13" x 24" x 18"
- ■ Medium service box - 17" x 30" x 18"
- ▯ Junction box - 17" x 30" x 24"
- ▨ Splice Vault - 24" x 36" x 24"

Hillsboro Public Works

GENERAL SITE LAYOUT

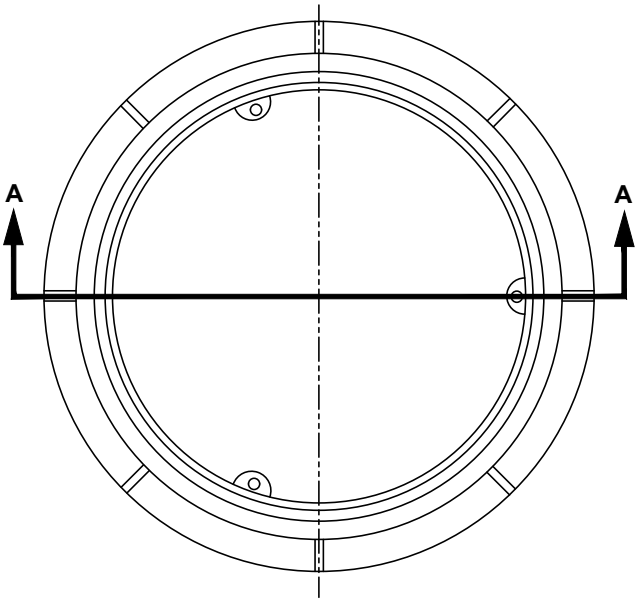
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 380-5

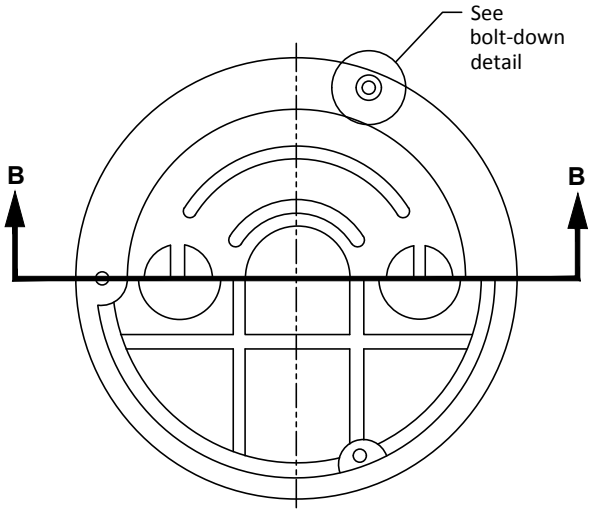
SCALE NTS

FILE NAME: COH-380-5.DWG

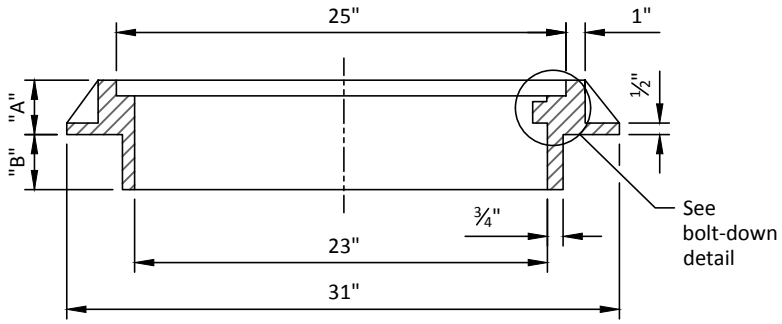
PLOT DATE:4/23/2018 11:17 AM



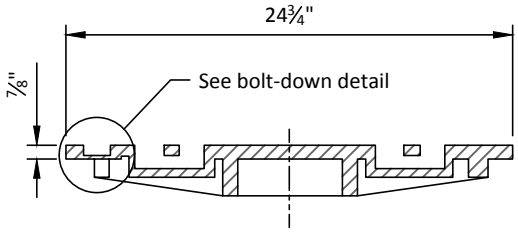
Frame



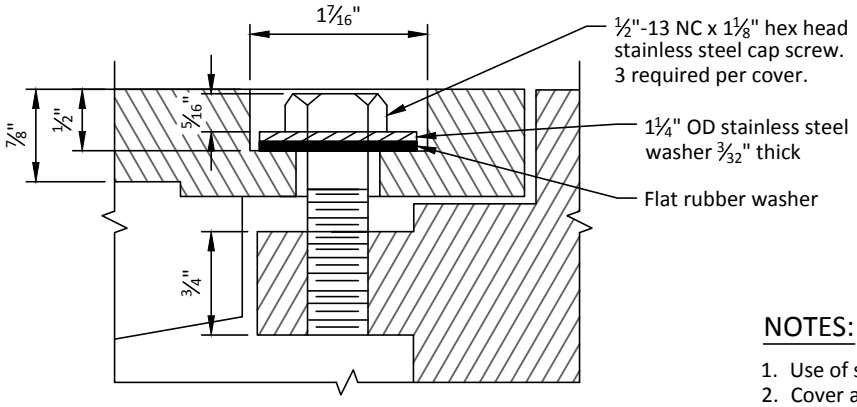
Cover



Section A-A



Section B-B



Bolt-down Detail

Type	"A"	"B"
Suburban	3"	3"
Standard	7"	3"

NOTES:

1. Use of suburban type manhole frame requires City approval.
2. Cover and frame shall be gray cast iron ASTM A-48 Class 30.
3. Cover and frame to be machined to a true bearing all around.

Hillsboro Public Works

BOLT-DOWN MANHOLE FRAME AND COVER FOR IN-STREET AREAS

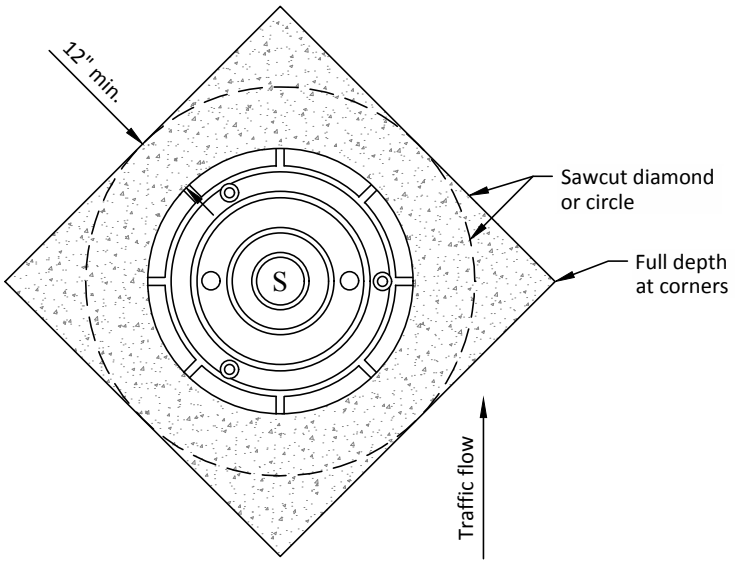
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 410-1

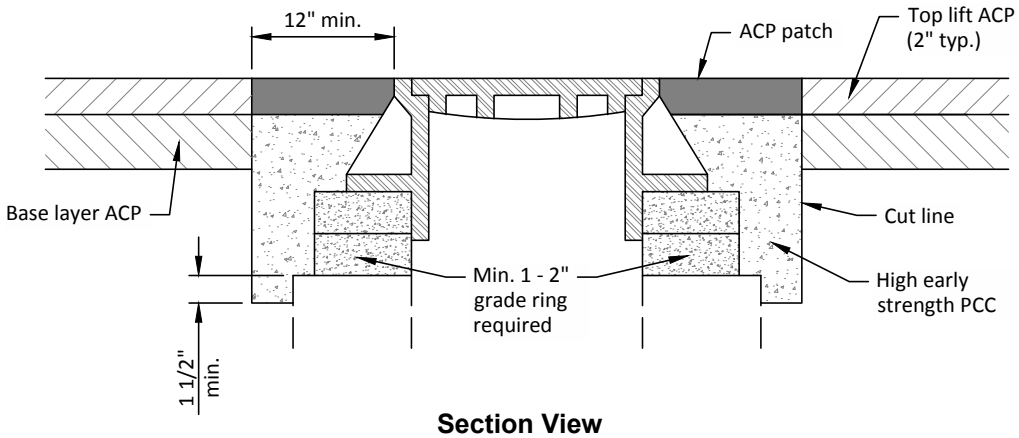
SCALE NTS

FILE NAME: COH-410-1.DWG

PLOT DATE: 3/7/2017 1:32 PM



Plan View



Section View

Step 1 Sawcut and remove pavement around manhole 12" minimum from manhole frame.

Step 2 Raise manhole frame and cover using concrete rings and approved mechanical adjustment devices to finish grade matching profile and cross slope.

Step 3 Backfill with high early strength PCC and ACP to depths as directed.

Step 4 Apply sand seal on surface and surface joint.

Hillsboro Public Works

MANHOLE ADJUSTMENT
IN ASPHALT ROADWAYS

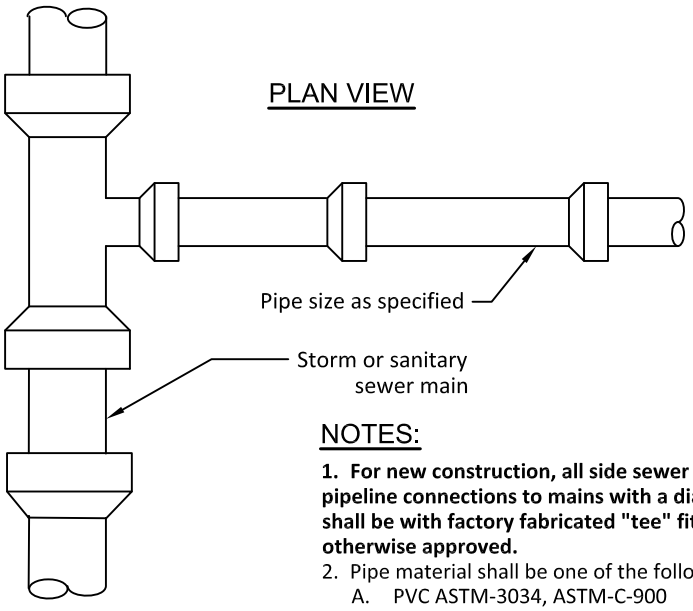
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

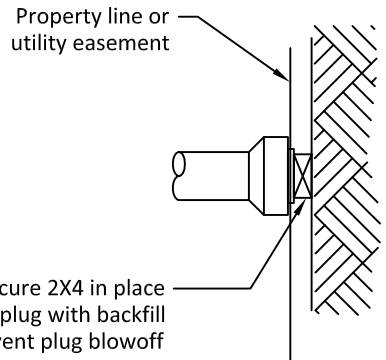
STD. DRG. NO. 410-2

SCALE NTS

FILE NAME: COH-410-2.DWG

PLOT DATE: 7/13/2017 3:20 PM

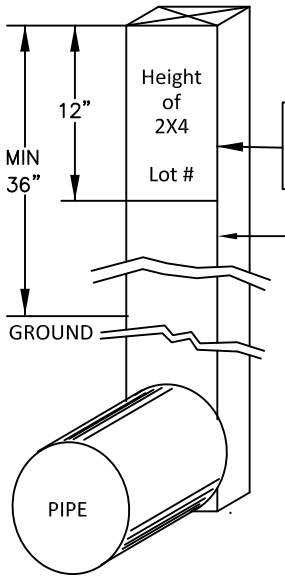




NOTES:

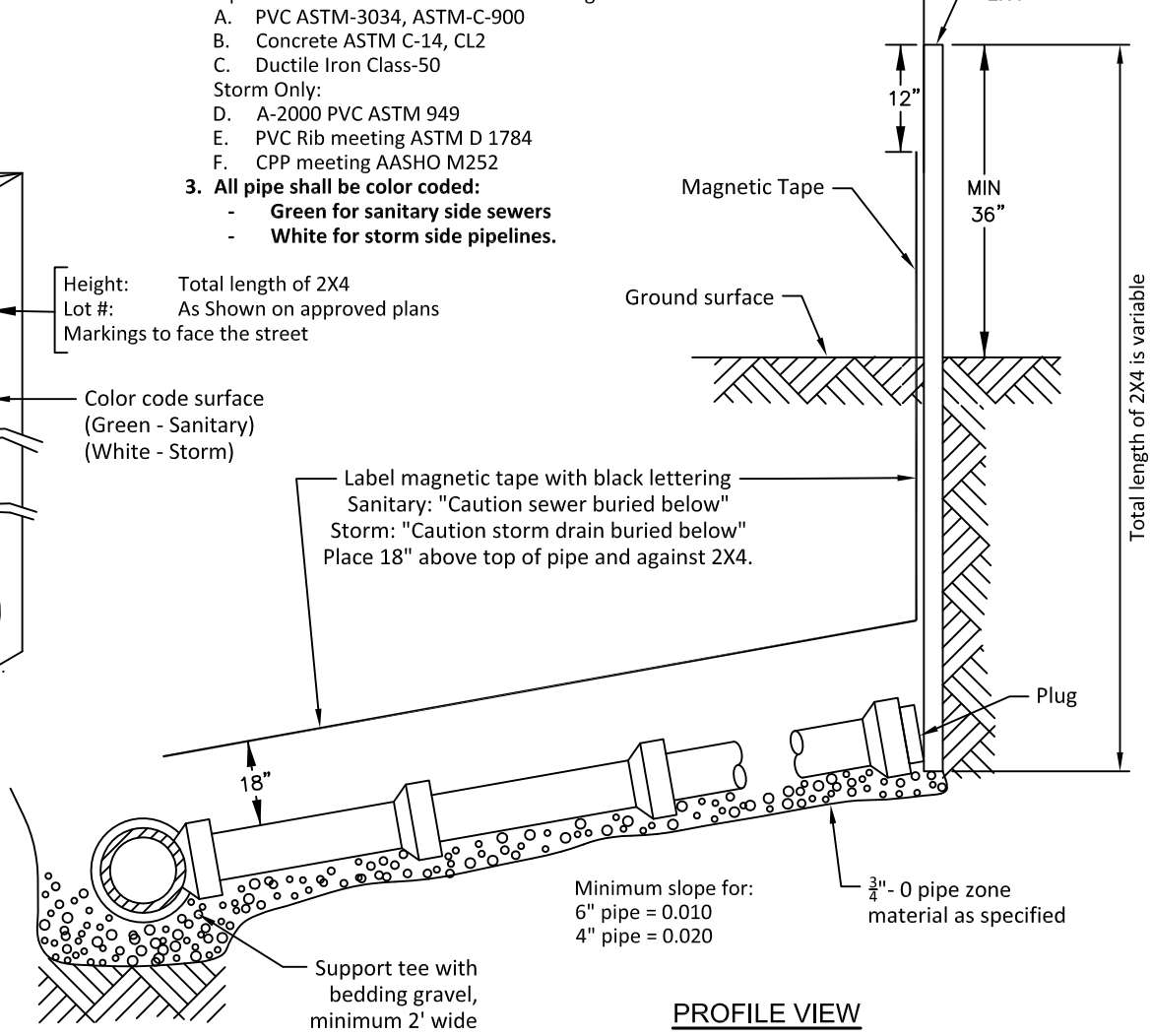
1. **For new construction, all side sewer and side storm pipeline connections to mains with a diameter of 18" or less shall be with factory fabricated "tee" fittings unless otherwise approved.**
2. Pipe material shall be one of the following:
   - A. PVC ASTM-3034, ASTM-C-900
   - B. Concrete ASTM C-14, CL2
   - C. Ductile Iron Class-50

   Storm Only:
   - D. A-2000 PVC ASTM 949
   - E. PVC Rib meeting ASTM D 1784
   - F. CPP meeting AASHO M252
3. **All pipe shall be color coded:**
   - **Green for sanitary side sewers**
   - **White for storm side pipelines.**



Height: Total length of 2X4
Lot #: As Shown on approved plans
Markings to face the street

Color code surface
(Green - Sanitary)
(White - Storm)



PROFILE VIEW

Hillsboro Public Works

SIDE SEWER / SIDE STORM PIPELINE

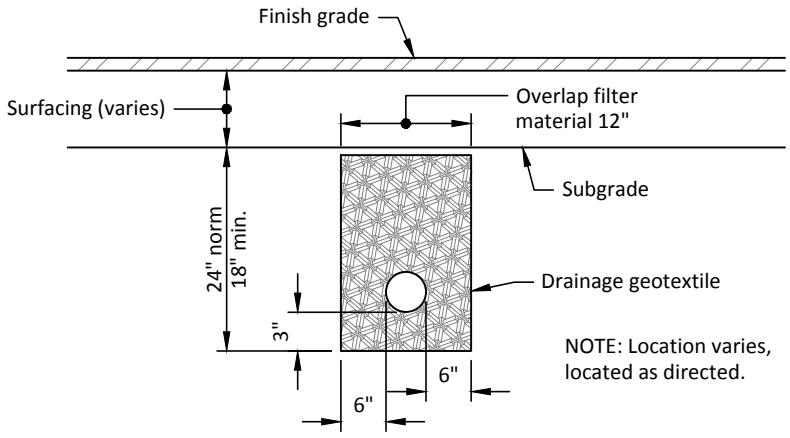
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

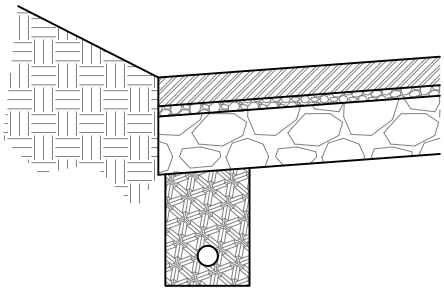
STD. DRG. NO. 410-3

SCALE NTS

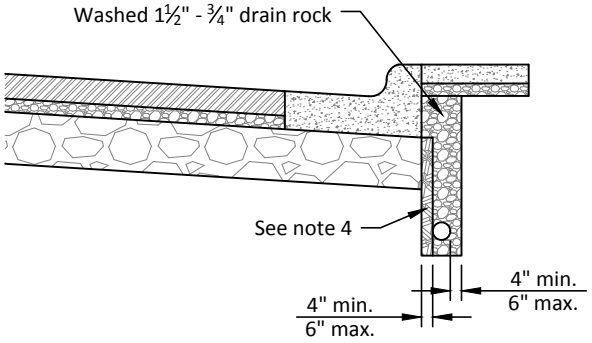
FILE NAME: COH-410-3.DWG

PLOT DATE: 2/23/2018 1:53 PM

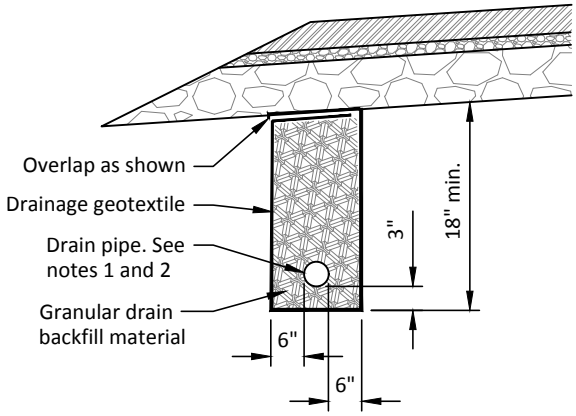




Without Shoulder
(For subgrade details, see right)



With Shoulder



Subgrade Drain Detail

NOTES:

1. Use 4" or 6" ID ASTM D-2729 perforated PVC pipe as directed by the Engineer.
2. Connect subgrade drain pipe to drainage structure using plastic pipe with rigid coupling matching the drain pipe diameter.
3. Locate the longitudinal subgrade drain on the uphill side of the road or as directed by the Engineer.
4. Pillow drain with non-woven drainage geotextile on both sides to dewater pavement base course or subgrade. Drain assembly shall be installed according to manufacturer specifications.
5. This detail is not intended for use in LIDA facilities. See CWS *LIDA Handbook* for additional information.

Hillsboro Public Works

SUBGRADE DRAIN

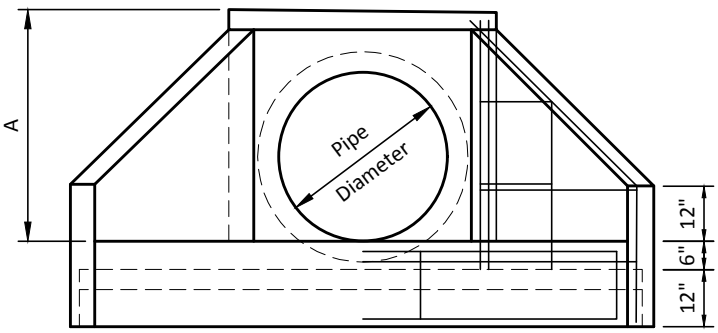
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 420-1

SCALE NTS

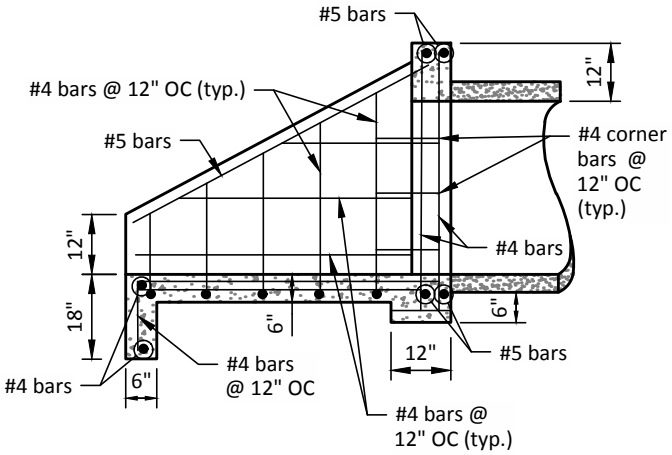
FILE NAME: COH-420-1.DWG

PLOT DATE: 1/13/2017 4:59 PM



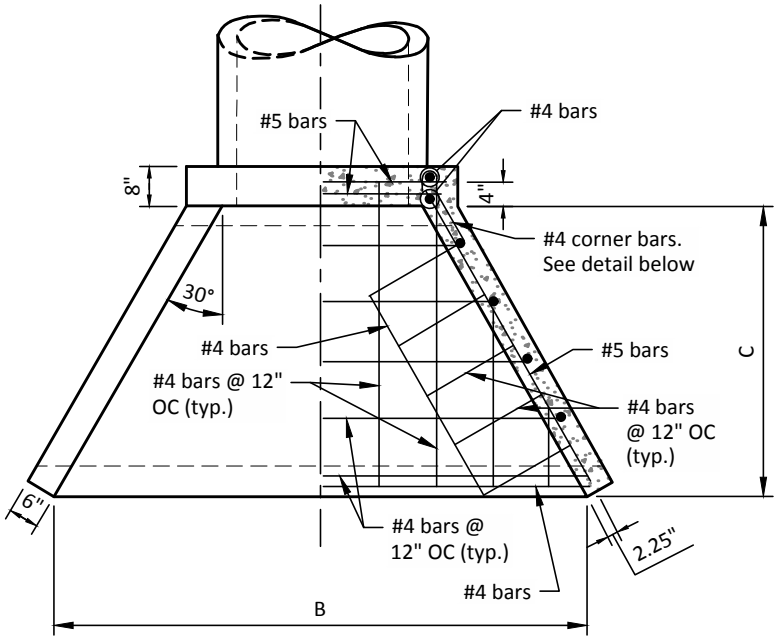
ELEVATION

SCALE: NTS



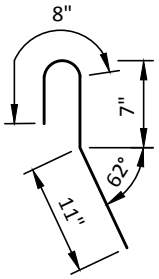
TYPICAL WING ELEVATION

SCALE: NTS



PLAN

SCALE: NTS



CORNER BARS DETAIL

SCALE: NTS

HEADWALL DIMENSIONS

Pipe Diameter	A	B	C
18"	2'-6"	4'-0 7/8"	2'-0"
24"	3'-0"	5'-9 3/4"	3'-0"
30"	3'-6"	7'-6 5/8"	4'-0"
36"	4'-0"	9'-3 1/2"	5'-0"
39"	4'-3"	10'-2"	5'-6"
42"	4'-6"	11'-0 1/4"	6'-0"
48"	5'-3"	12'-9 1/8"	7'-0"
54"	5'-9"	14'-6"	8'-0"
60"	6'-3"	16'-2 7/8"	9'-0"
66"	6'-9"	17'-11 3/4"	10'-0"
72"	7'-3"	19'-8 5/8"	11'-0"

NOTES:

1. All concrete shall be class "A".
2. All corners shall be chamfered 3/4"
3. reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.
4. Provide a 12" footing as shown where required to maintain 4" minimum coverage for pipes.

Hillsboro Public Works

CONCRETE HEADWALL FOR LARGE DIAMETER PIPES (≥18")

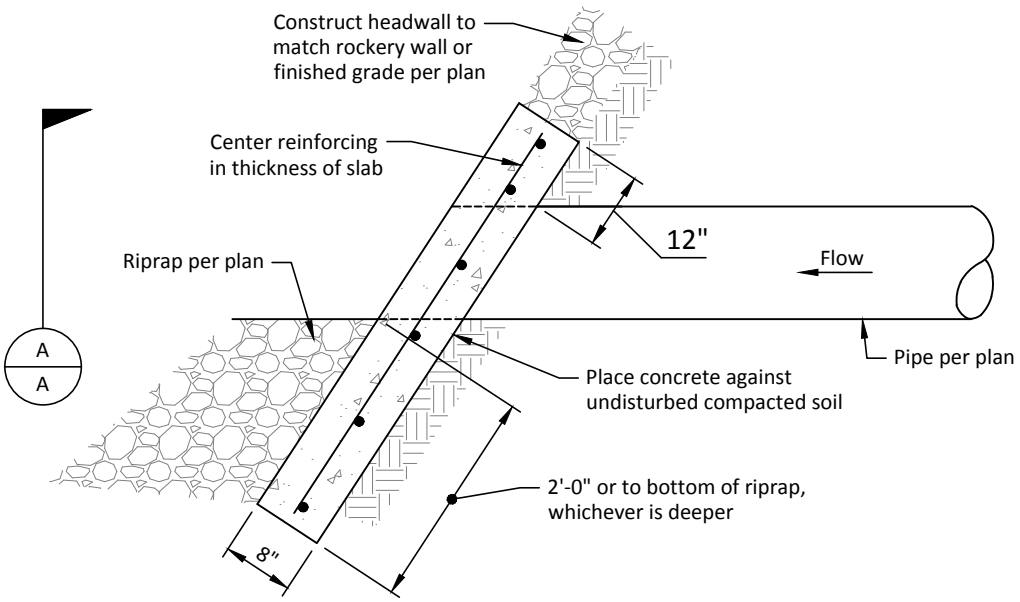
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 420-2

SCALE NTS

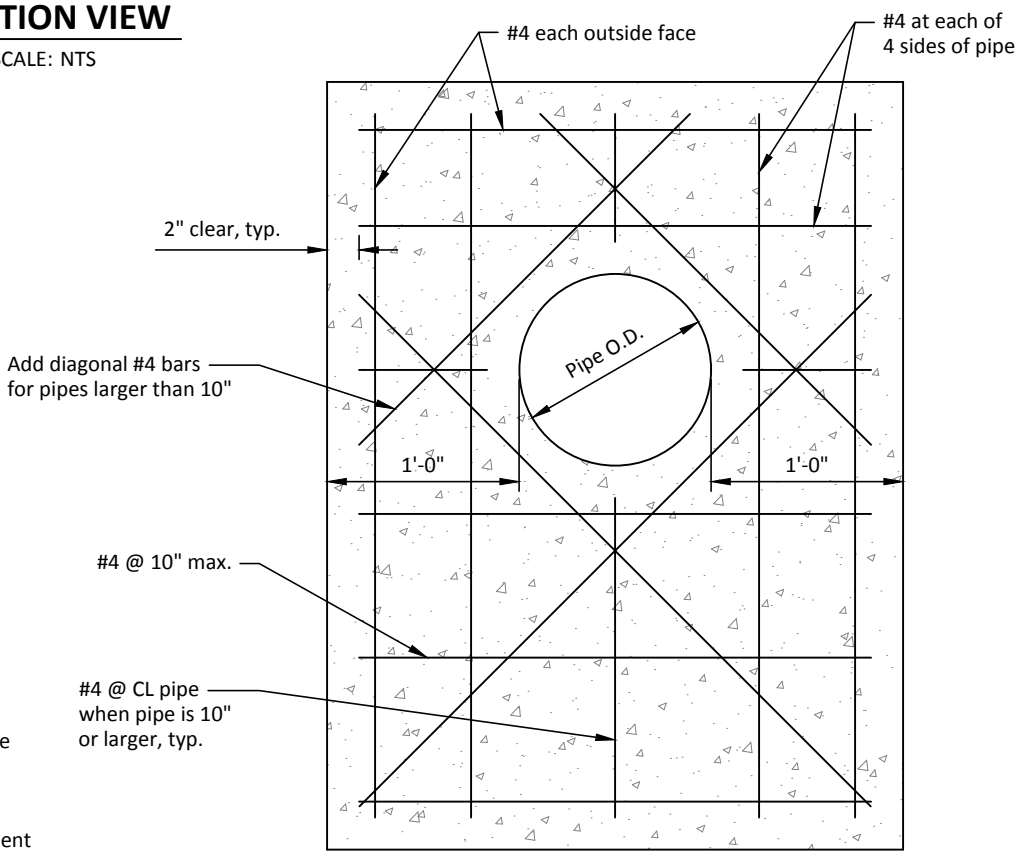
FILE NAME: COH-420-2.DWG

PLOT DATE: 1/13/2017 4:58 PM



SECTION VIEW

SCALE: NTS



VIEW A-A

SCALE: NTS

NOTES:

1. Provide commercial grade concete with a minumum compressive strength of 3,000 PSI at 28 days.
2. Provide deformed bar reinforcement conforming to the requirements of ASTM A615, Grade 60.
3. Chamfer exposed corners of concrete ¾" x ¾" or radius ¾".

Hillsboro Public Works

CONCRETE HEADWALL FOR SMALL DIAMETER PIPES (<18")

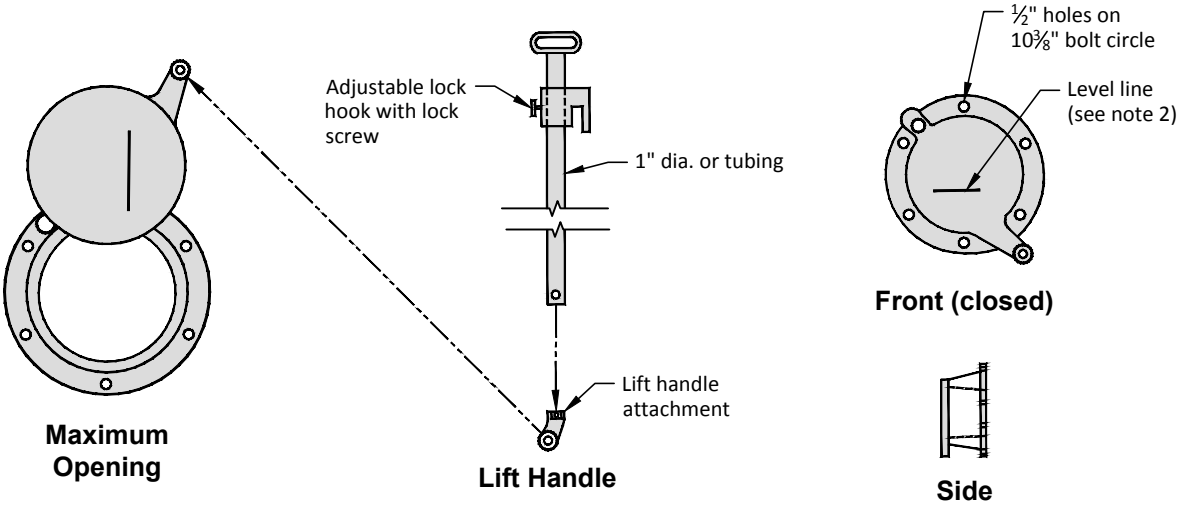
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 420-3

SCALE NTS

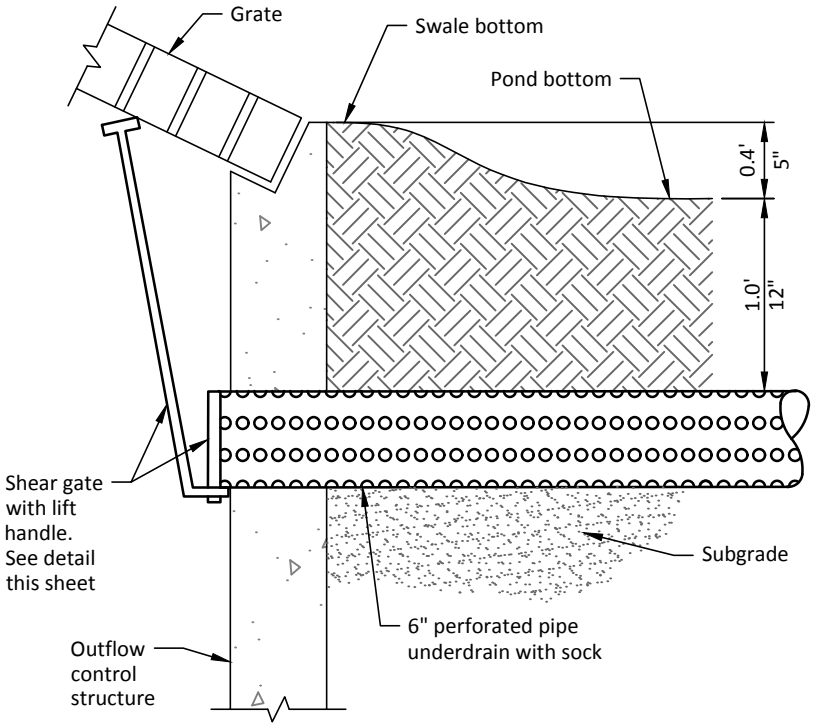
FILE NAME: COH-420-3.DWG

PLOT DATE: 6/16/2017 4:15 PM



SHEAR GATE

SCALE: NTS



PERFORATED UNDERDRAIN

SCALE: NTS

NOTES:

1. The frame and ladder or steps are to be offset so that the shear gate is visible from the top.
2. The shear gate shall be made of aluminum alloy in accordance with ASTM B 26M and ASTM B 275, designation ZG32A; or cast iron in accordance with ASTM A 48, Class 30B. The lift handle shall be made of a similar metal to the gate (to prevent galvanic corrosion), it may be solid rod or hollow tubing, with adjustable hook as required. A neoprene rubber gasket is required between the riser mounting flange & gate flange. Install the gate so that the level-line mark is level when the gate is closed. The mating surfaces of the lid and the body shall be machined for proper fit. All shear gate bolts shall be stainless steel.
3. The shear gate max. opening shall be controlled by limited hinge movement, a stop tab, or some other device.
4. One perforated underdrain is required for every 10 feet of pond bottom width.
5. The perforated underdrain is intended for temporary dewatering of the facility for maintenance. The shear gate shall remain closed at all other times.

Hillsboro Public Works

PERFORATED UNDERDRAIN WITH SHEAR GATE

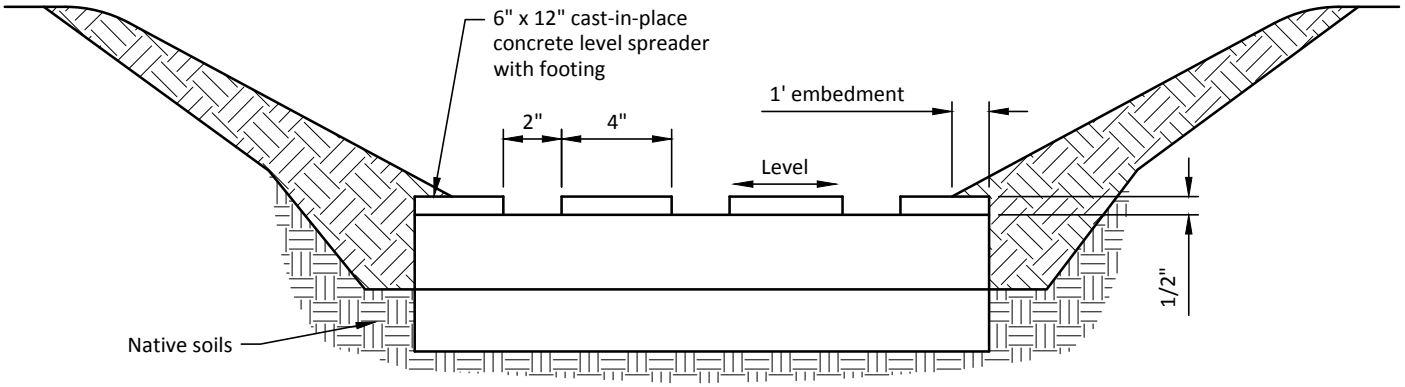
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

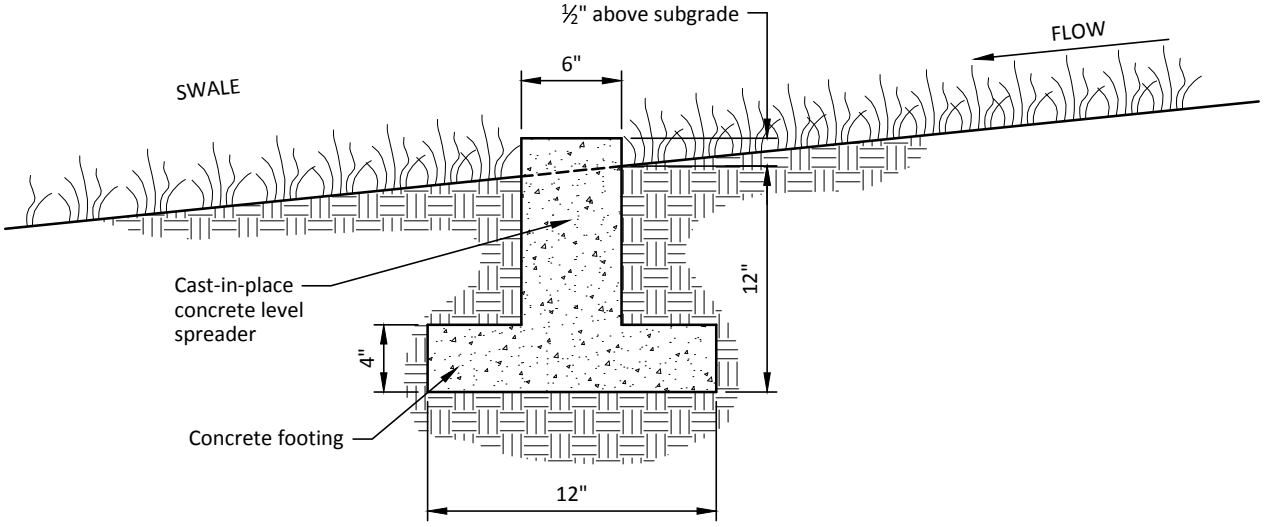
STD. DRG. NO. 420-4

SCALE NTS

FILE NAME: COH-420-4.DWG

PLOT DATE: 10/3/2017 1:35 PM





NOTES:

1. The spreader shall be installed level and on contour
2. Concrete spreader shall be cast-in-place. Top of spreader shall be broom finished in the direction of flow.

Hillsboro Public Works

LEVEL SPREADER

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 420-5

SCALE NTS

FILE NAME: COH-420-5.DWG

PLOT DATE: 6/28/2017 3:13 PM

DEWATERING GENERAL NOTES:

1. Dewatering plans for passive methods of treatment shall shall show locations of any proposed temporary storage of onsite sediment laden water and method of treatment prior to discharge.
2. Temporary sediment basins shall include a 90 degree upright elbow perforated pipe wrapped in filter fabric.
3. Temporary sediment basins shall include a rock berm and use of silt curtains in lieu of sediment fence adjacent to perforated pipe to aid in velocity reduction and settlement of fines.
4. Additional dewatering filtration treatment methods or systems may be required to prevent visible sediment laden water discharges.

Hillsboro Public Works

DEWATERING GENERAL NOTES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 420-6

SCALE NTS

FILE NAME: COH-420-6.DWG

PLOT DATE: 8/3/2018 2:02 PM

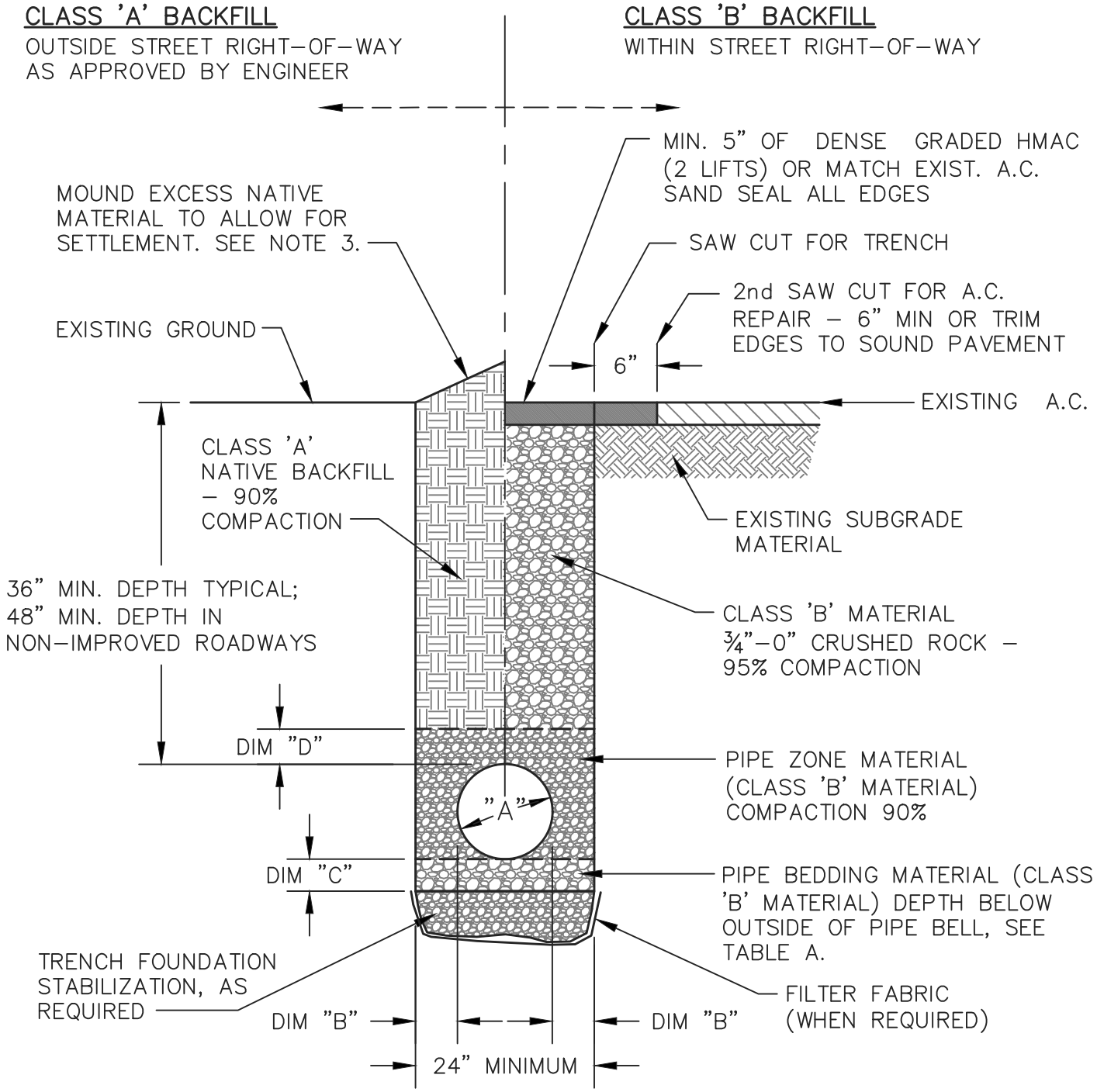


TABLE A			
"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)
4	10	4	8
6	9	4	8
8	8	6	10
10	8	6	10
12	8	6	10
18	8	6	12
24	8	6	12

NOTES:

1. "A" = NOMINAL PIPE DIAMETER
2. SEE "CITY OF HILLSBORO DESIGN & CONSTRUCTION STANDARDS" FOR ADDITIONAL REQUIREMENTS.
3. RESTORE LANDSCAPE TO PRE-EXISTING CONDITIONS OR BETTER.

Hillsboro Water

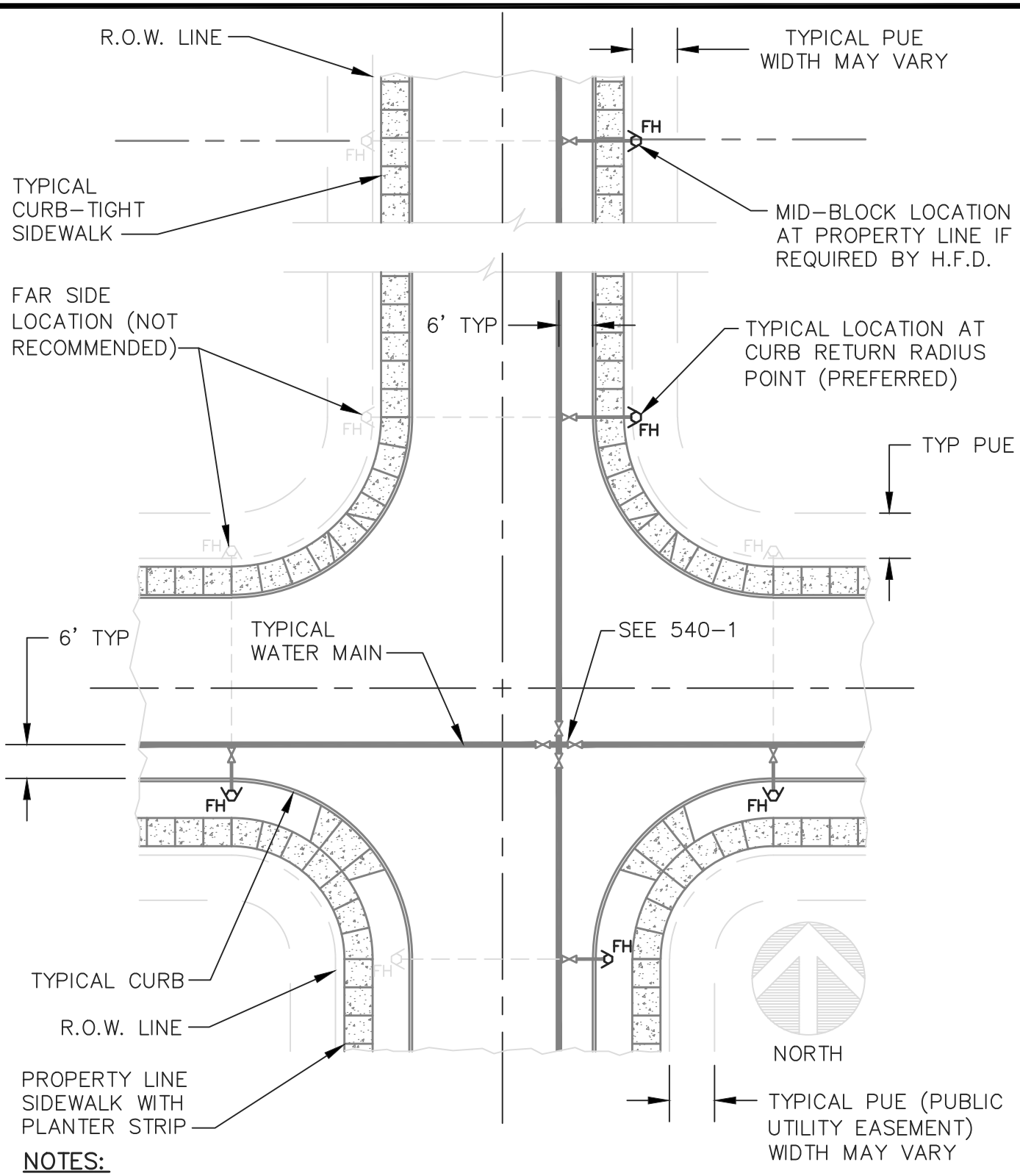
TYPICAL WATERLINE TRENCH BACKFILL

SCALE: NONE

DATE: SEPT 2017

520-1

FILENAME: 520-1 DRAFT.DWG



NOTES:

1. A FIRE CODE OFFICAL MUST APPROVE LOCATION OF ALL FIRE HYDRANTS.
2. HYDRANT SHALL BE LOCATED IN AN AREA WHICH ALLOWS FOR REQUIRED CLEAR ZONE SURROUNDING THE HYDRANT. SEE 550–1 FOR CLEAR ZONE DETAIL.
3. SEE 550–2 FOR HYDRANT INSTALLATION DETAILS.
4. CURB AND SIDEWALK CONFIGURATION CAN BE FOUND IN THE CITY'S TRANSPORTATION SYSTEM PLAN.

Hillsboro Water	**TYPICAL WATER LINE & FIRE HYDRANT LOCATION**	**SCALE: NONE**	**530-1**
		DATE: SEPT 2017	

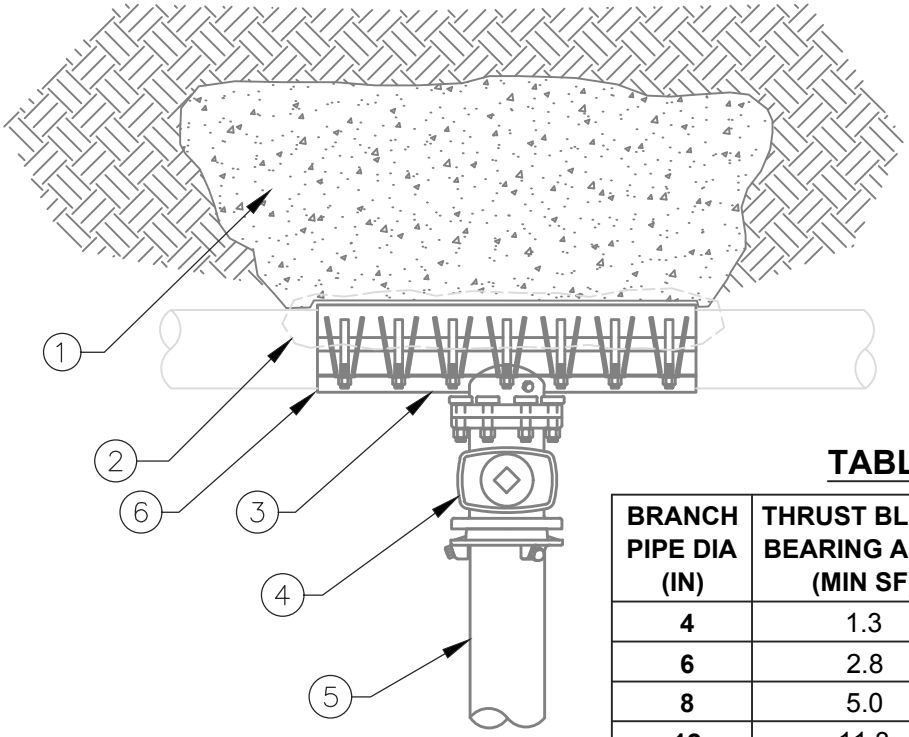


TABLE 1

BRANCH PIPE DIA (IN)	THRUST BLOCK BEARING AREA (MIN SF)	THRUST BLOCK CONCRETE (MIN CY)
4	1.3	0.05
6	2.8	0.10
8	5.0	0.18
12	11.3	0.42
16	20.1	0.75
18	26.0	0.97

KEYNOTES:

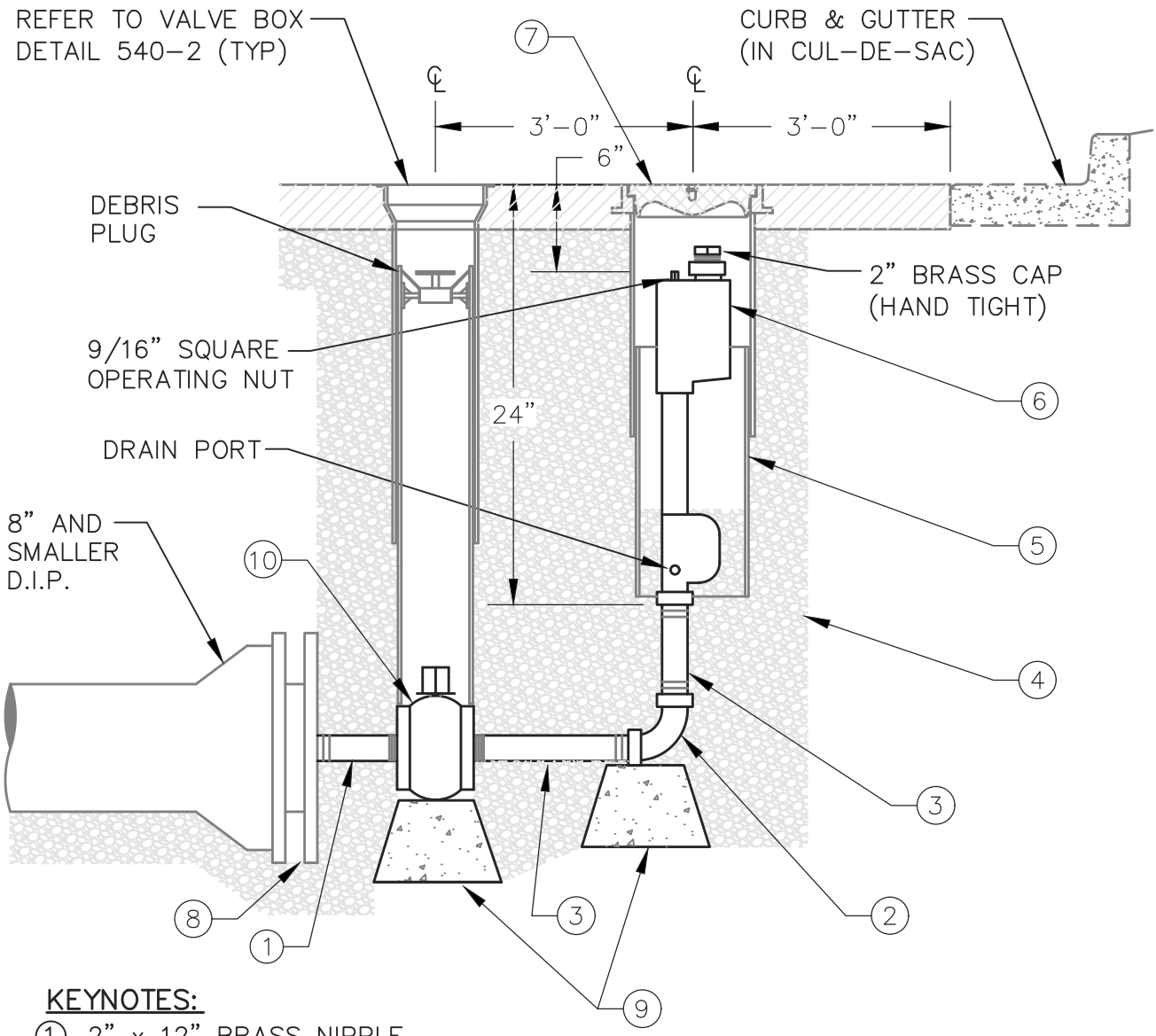
① CONCRETE THRUST BLOCK POURED AGAINST UNDISTURBED EARTH. THRUST BLOCK SIZE SHALL BE PER TABLE 1 AND SHALL NOT BE LESS THAN ONE FOOT IN ANY DIMENSION. CONCRETE SHALL BE CLASS 3000.
② COVER TAPPING SLEEVE WITH 8 MIL PLASTIC MATERIAL AS SHOWN PRIOR TO POURING THRUST BLOCK AND BACKFILLING.
③ STAINLESS STEEL TAPPING SLEEVE WITH GASKET AND FLANGED CONNECTION.
④ GATE VALVES 10" AND LARGER WITH LESS THAN 24" BETWEEN THE OPERATING NUT AND FINISHED GRADE WILL REQUIRE A HORIZONTAL BEVEL GEAR ACTUATOR.
⑤ ALL JOINTS ON BRANCH PIPE SHALL BE RESTRAINED.
⑥ EDGE OF TAPPING SLEEVE SHALL BE A MINIMUM OF 18" FROM BEND OR JOINT.

NOTES: (TAPPING CONTRACTOR ONLY)

1. BEFORE INSTALLING TAPPING SLEEVE, CONTRACTOR SHALL THOROUGHLY CLEAN PIPE TO REMOVE ALL DIRT, ROCKS, AND OTHER FOREIGN MATERIAL FROM PIPE WHERE SLEEVE WILL BE INSTALLED.
2. SLEEVE BOLTS SHALL BE TIGHTENED TO MANUFACTURER'S TORQUE SPECIFICATIONS.
3. CONTRACTOR SHALL ENSURE THAT GASKET IS PROPERLY ALIGNED AND FREE OF FOREIGN MATERIAL PRIOR TO TIGHTENING SLEEVE BOLTS.
4. SLEEVE LOCATION AND INSTALLATION SHALL BE APPROVED BY WATER DEPARTMENT INSPECTOR PRIOR TO TAPPING.
5. CONTRACTOR SHALL AIR TEST SLEEVE TO 40 PSI PRIOR TO TAPPING.
6. CONTRACTOR SHALL FLUSH VALVE PRIOR TO PIPE CONNECTION.

Hillsboro Water	**TAPPING SLEEVE**	**SCALE: NONE**	**530-2**
		DATE: SEPT 2017	

FILENAME: 530-2 DRAFT.DWG



KEYNOTES:

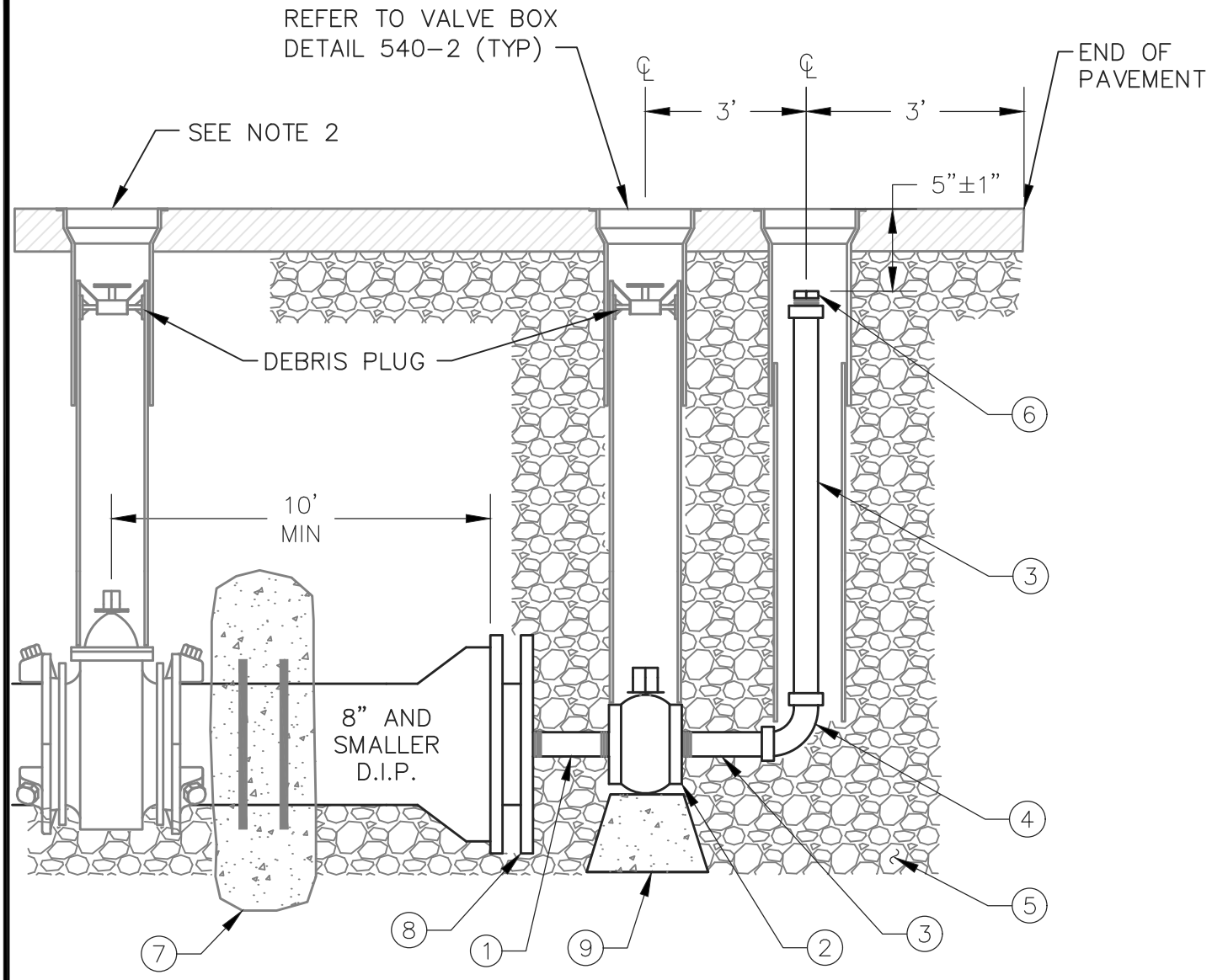
1. 2" x 12" BRASS NIPPLE
2. 2" FIPT 90° BRASS ELBOW
3. 2" BRASS NIPPLE (LENGTH WILL VARY)
4. GRANULAR DRAIN BACKFILL MATERIAL
5. 8" PVC ASTM D-3034, LENGTH AS REQUIRED
6. KUPFERLE MODEL #TF500 BLOW-OFF OR APPROVED EQUIVALENT
7. OLYMPIC FOUNDRY 12" CAST IRON VALVE BOX, "PORTLAND STYLE" BODY AND LID #5-603 (GRIND OFF WORDS "PORTLAND OR." LEAVE WORD "WATER")
8. RESTRAINED TYTON PLUG W/ 2" TAP (SEE NOTE 2.)
9. 8"x8"x8" CONCRETE PIER BLOCK OR EQUIVALENT SUPPORT ON UNDISTURBED EARTH
10. 2" GATE VALVE w/2" OPERATING NUT FIPT x FIPT

NOTES:

1. THIS DETAIL APPLICABLE TO DEAD END LINES SERVING CUSTOMERS WHICH WILL NOT BE EXTENDED IN THE FUTURE.

Hillsboro Water	**2" STANDARD BLOW-OFF ASSEMBLY - PERMANENT**	**SCALE: NONE**	**530-3**
		DATE: SEPT 2017	

FILENAME: 530-3 DRAFT.DWG



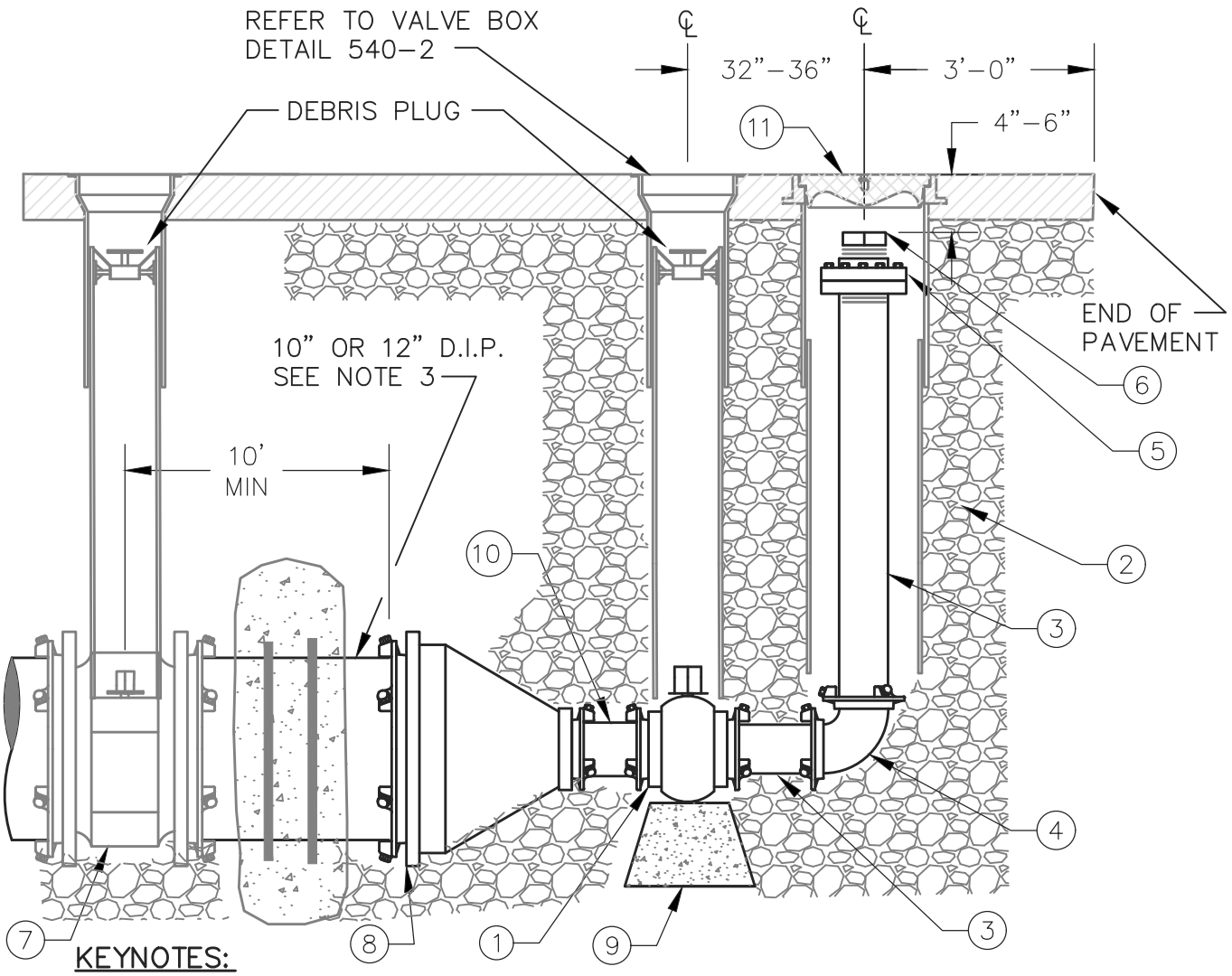
KEYNOTES:

① 2" x 12" GALVANIZED PIPE NIPPLE
② 2" GATE VALVE w/ 2" OPERATING NUT FIPT x FIPT
③ 2" GALVANIZED NIPPLE (LENGTH WILL VARY)
④ 2" FIPT 90° GALVANIZED ELBOW
⑤ PIPE BEDDING AND BACKFILL MATERIAL PER 520-1
⑥ 2" BRASS COUPLER AND PLUG, HAND TIGHT
⑦ CONCRETE STRADDLE BLOCK FOR EXISTING UNRESTRAINED PIPE, SEE 530-7.
⑧ RESTRAINED TYTON PLUG w/ 2"TAP OR MJ CAP & RETAINER GLAND w/ 2"TAP
⑨ 8"x8"x8" CONCRETE PIER BLOCK OR EQUIVALENT SUPPORT ON UNDISTURBED EARTH

NOTES:

1. THIS DETAIL APPLICABLE TO DEAD END LINES SERVING CUSTOMERS WHICH MAY/WILL BE EXTENDED IN THE FUTURE.
2. INSTALL GATE VALVE SIZED AT FULL PIPE DIAMETER WHERE SHOWN.

Hillsboro Water	**2" BLOW-OFF ASSEMBLY FOR FUTURE EXTENSION**	**SCALE: NONE**	**530-4**
		DATE: SEPT 2017	



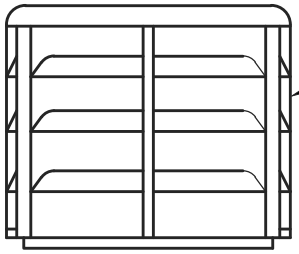
KEYNOTES:

① 4" RESTRAINED MJ x MJ GATE VALVE
② PIPE BEDDING AMD BACKFILL MATERIAL PER 520-1
③ 4" DIP PIPE SPOOL THREADED FLANGE CUT TO REQ'D LENGTH
④ 4" DIP 90° MJ BEND
⑤ 4" BLIND FLANGE WITH 4" FIPT
⑥ 4" PVC THREADED PLUG (HAND TIGHT)
⑦ RESTRAINED LINE-SIZE MJ BUTTERFLY VALVE (SEE NOTES 1 AND 2.)
⑧ RESTRAINED MJ x 4" REDUCER (SEE NOTE 2.)
⑨ 8"x8"x8" CONCRETE PIER BLOCK OR EQUIVALENT SUPPORT ON UNDISTURBED EARTH
⑩ 4" D.I. PIPE
⑪ 8" OVERSIZED CAST IRON VALVE BOX AND LID W/8" SDR PVC SLEEVE (ASTM D3034)

NOTES:

1. THIS DETAIL APPLICABLE TO DEAD END LINES SERVING CUSTOMERS WHICH MAY/WILL BE EXTENDED IN THE FUTURE.
2. ALL PIPE JOINTS SHALL BE RESTRAINED. ADD STRADDLE BLOCK TO EXISTING UNRESTRAINED PIPE – SEE 530-7.
3. FOR PIPES LARGER THAN 12", SEE ENGINEER FOR BLOW-OFF REQUIREMENT.
4. GALVANIZED PIPE IS ACCEPTABLE FOR USE IN PLACE OF DUCTILE IRON PIPE. CONTACT THE WATER DEPARTMENT FOR DETAILS.

Hillsboro Water	**4" BLOW-OFF ASSEMBLY FOR FUTURE EXTENSION**	SCALE: NONE DATE: SEPT 2017	530-5



UV RESISTENT BOX
WITH LOCKING LID

CHANNEL ENCLOSURE "GREEN"
WITH HEX LOCKING SYSTEM

4" AIR GAP

DECHLOR BASKET

SPECIFY DEPTH OF BURY WHEN ORDERING

6" SEWER PIPE CONNECTION

DEBRIS PLUG

SEE DETAIL 530-4 FOR DETAILED NOTES

DEBRIS PLUG

CLEAN 1" DRAIN ROCK 2 CUBIC FEET MIN.

8"x8"x8" CONCRETE PIER BLOCK OR

ELEVATION

PLAN

CURB & GUTTER

6"

PLANTER OR SIDEWALK

5' MIN

NOTES:

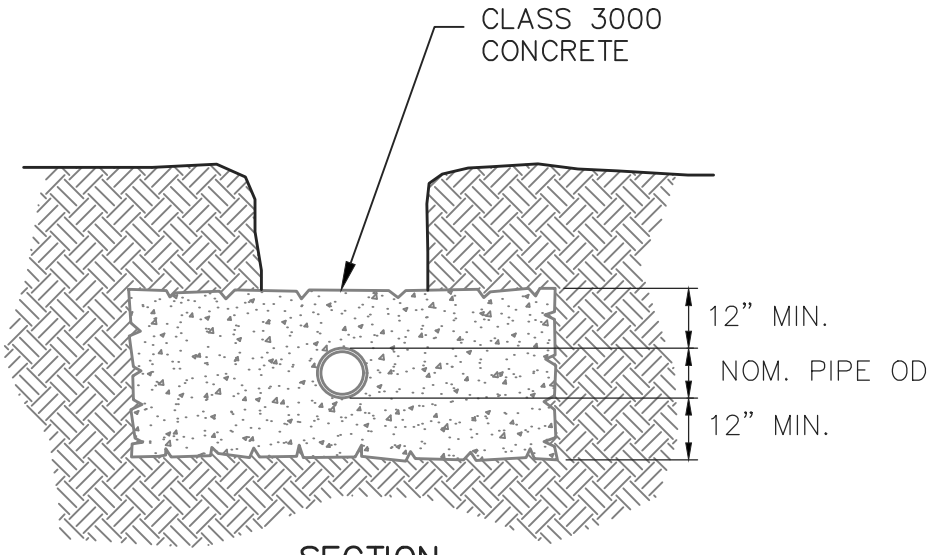
AUTOMATIC FLUSHING DEVICE SHALL HAVE 2" BRASS FIPT INLET, LEADING VERTICALLY INTO A 2" AUTOMATIC SOLENOID VALVE. AUTOMATIC SOLENOID VALVE SHALL HAVE A 150 PSI RATING. EACH UNIT SHALL BE FURNISHED WITH A STAND-ALONE VALVE CONTROLLER. VALVE CONTROLLER WILL NOT REQUIRE A SECOND HAND-HELD DEVICE FOR PROGRAMMING. CONTROLLER MUST HAVE MINIMUM OF 12 POSSIBLE CYCLES PER DAY, UP TO 8 HOURS PER FLUSH CYCLE AND BE SUBMERSIBLE TO 12 FEET, OPERATE WITH A 9 VOLT BATTERY (COMPARTMENT HOLDS TWO BATTERIES) AND HAVE RESIN-SEALED ELECTRICAL COMPONENTS. SOLENOID SHALL HAVE NO LOOSE PARTS WHEN REMOVED FROM VALVE UNIT. EACH UNIT SHALL HAVE A DOUBLE-VALVE, ALL BRASS, SAMPLING POINT. REMOVAL OF 2" SOLENOID VALVE SHALL BE POSSIBLE VIA AN O-RING CONNECTOR LOCATED UNDER THE VALVE AFTER REMOVAL OF STAINLESS STEEL ACCESS PLATE. VALVE ASSEMBLY SHALL BE HOUSED IN A PVC ENCLOSURE AND EACH UNIT SHALL BE SELF-DRAINING, NON-FREZZING, ALL ABOVE-GROUND COMPONENTS SHALL BE CONTAINED WITHIN A UV-RESISTENT LOCKING COVER, AS MANUFACTURED BY KUPFERLE FOUNDRY COMPANY, MODEL 9800, ST. LOUIS, MO. 1-800-231-3990 OR APPROVED EQUAL.

NOTE:

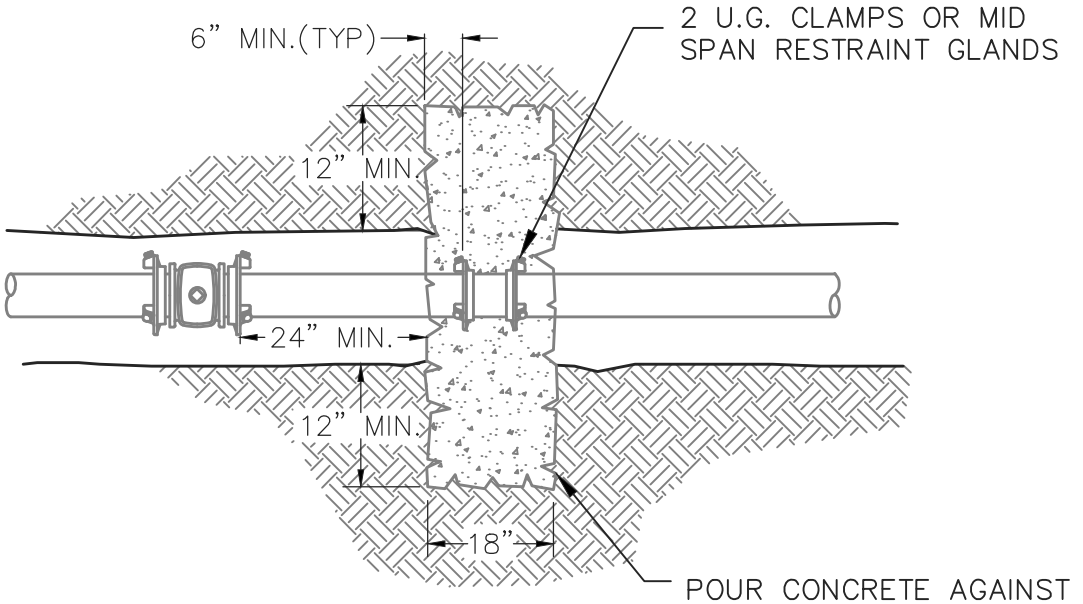
SIDEWALK EASEMENT MAY BE REQUIRED IF WALK IS OUTSIDE OF RIGHT-OF-WAY.

Hillsboro Water	2" AUTOMATIC FLUSHING DEVICE	SCALE: NONE DATE: AUGUST 2017	530-6

FILENAME: 530-6.DWG



SECTION



PLAN

NOTES:

1. STRADDLE BLOCKS SHALL BE USED ONLY ON EXISTING PIPES WITH NO MECHANICAL RESTRAINTS OR AT LOCATIONS WHERE MECHANICAL PIPE JOINT RESTRAINTS ARE NOT FEASIBLE. PRIOR APPROVAL BY WATER DEPARTMENT IS REQUIRED.
2. INSTALL MINIMUM 8–MIL TOTAL THICKNESS POLYETHYLENE SHEET AROUND RESTRAINT CLAMPS AND SECURE SHEET ENDS PRIOR TO POURING CONCRETE.
3. THIS DETAIL APPLICABLE TO 8" AND SMALLER WATER MAINS. CONCRETE STRADDLE BLOCKS FOR 10" AND LARGER WATER MAINS SHALL BE DESIGNED AND STAMPED BY THE ENGINEER OF RECORD.
4. ANY FIELD MIXING OF CONCRETE SHALL BE APPROVED BY THE WATER DEPARTMENT.

Hillsboro Water	**STRADDLE BLOCKS**	**SCALE: NONE**	**530-7**
		DATE: SEPT 2017	

FILENAME: 530–7.DWG

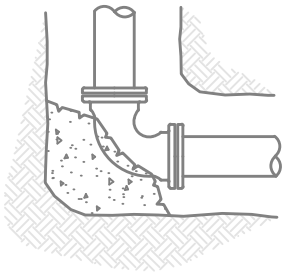
(HORIZONTAL)
BEARING AREA OF THRUST BLOCKS IN SQ FT

FITTING SIZE	TEE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4	1.3	1.8	1.0	1.0	1.0
6	2.8	4.0	2.2	1.1	1.0
8	5.0	7.1	3.8	2.0	1.0
12	11.3	16.0	8.7	4.4	2.2
16	20.1	28.4	15.4	7.8	3.9
20	31.1	44.4	24.0	12.3	6.2
24	45.2	64.0	34.6	17.7	8.9

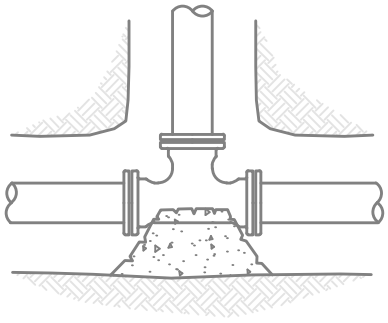
VOLUME OF THRUST BLOCK IN CU YDS (VERTICAL)

FITTING SIZE	BEND ANGLE		
	45°	22.5°	11.25°
4	1.1	0.4	0.2
6	2.7	1.0	0.4
8	4.0	1.5	0.6
12	8.5	3.2	1.3
16	14.8	5.6	2.3

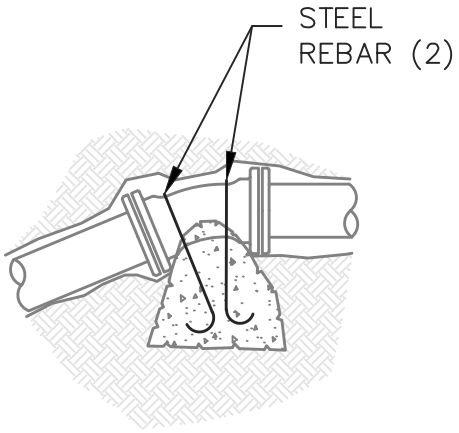
VALUES BASED ON 200 PSI WATER PRESSURE AND 2000 PSF SOIL BEARING CAPACITY



BEND



TEE

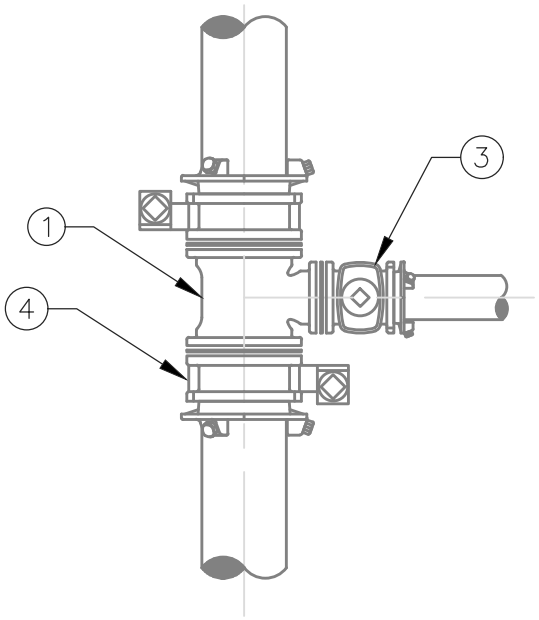


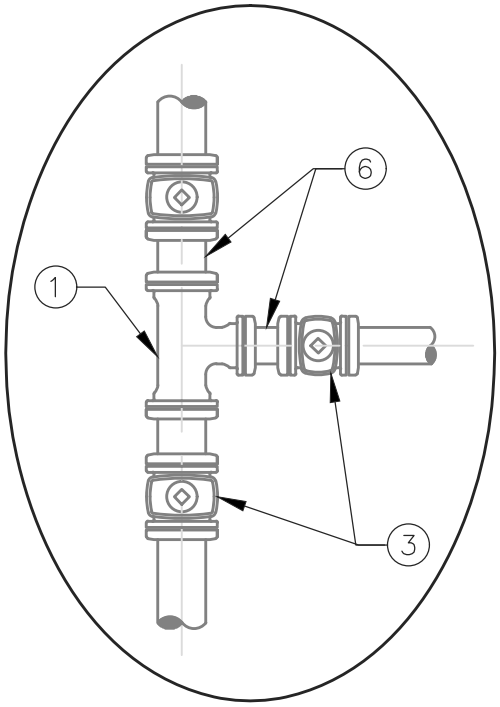
VERTICAL BEND

FITTING SIZE	REBAR SIZE	EMBEDMENT
4"–12"	#6	30"
14"–16"	#8	36"

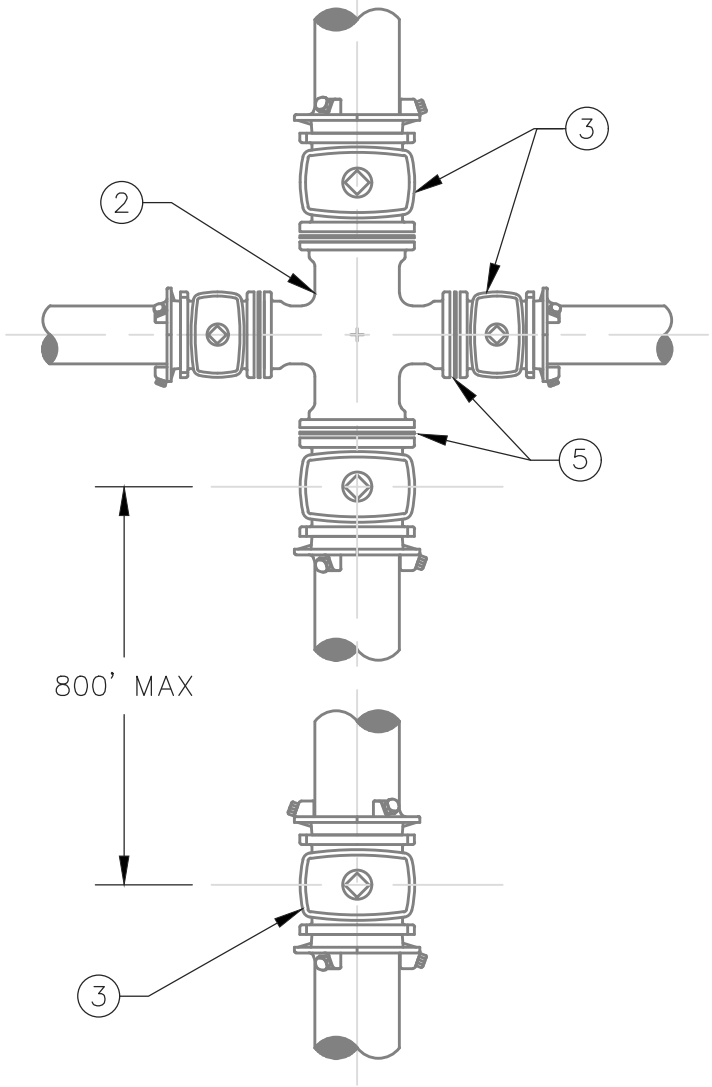
NOTES:

1. ALL PIPE FITTING TEES, BENDS, AND DEAD ENDS SHALL BE RESTRAINED BY CONCRETE THRUST BLOCKING OR MECHANICAL PIPE JOINT RESTRAINTS.
2. CONCRETE THRUST BLOCKING OR STRADDLE BLOCKS SHALL BE USED ONLY ON EXISTING PIPES WITH NO MECHANICAL RESTRAINTS OR AT LOCATIONS WHERE MECHANICAL PIPE JOINT RESTRAINTS ARE NOT FEASIBLE. PRIOR APPROVAL BY WATER DEPARTMENT IS REQUIRED. SEE 530–7 FOR STRADDLE BLOCK REQUIREMENTS.
3. ALL CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED EARTH.
4. ALL CONCRETE SHALL BE CLASS 3000.
5. INSTALL MINIMUM 8–MIL TOTAL THICKNESS POLYETHYLENE SHEET AROUND FITTING. SECURE SHEET ENDS TO PREVENT INFILTRATION OF DIRT BETWEEN SHEET AND PIPE FITTING PRIOR TO POURING CONCRETE.
6. PROTECT MECHANICAL JOINT FOLLOWERS AND BOLTS FROM CONCRETE WITH TEMPORARY FORMS AND POLYETHYLENE SHEETING – SEE NOTE 5.
7. ANY FIELD MIXING OF CONCRETE SHALL BE APPROVED BY THE WATER DEPARTMENT.





MJ SPOOL OPTION
SEE NOTE 7.



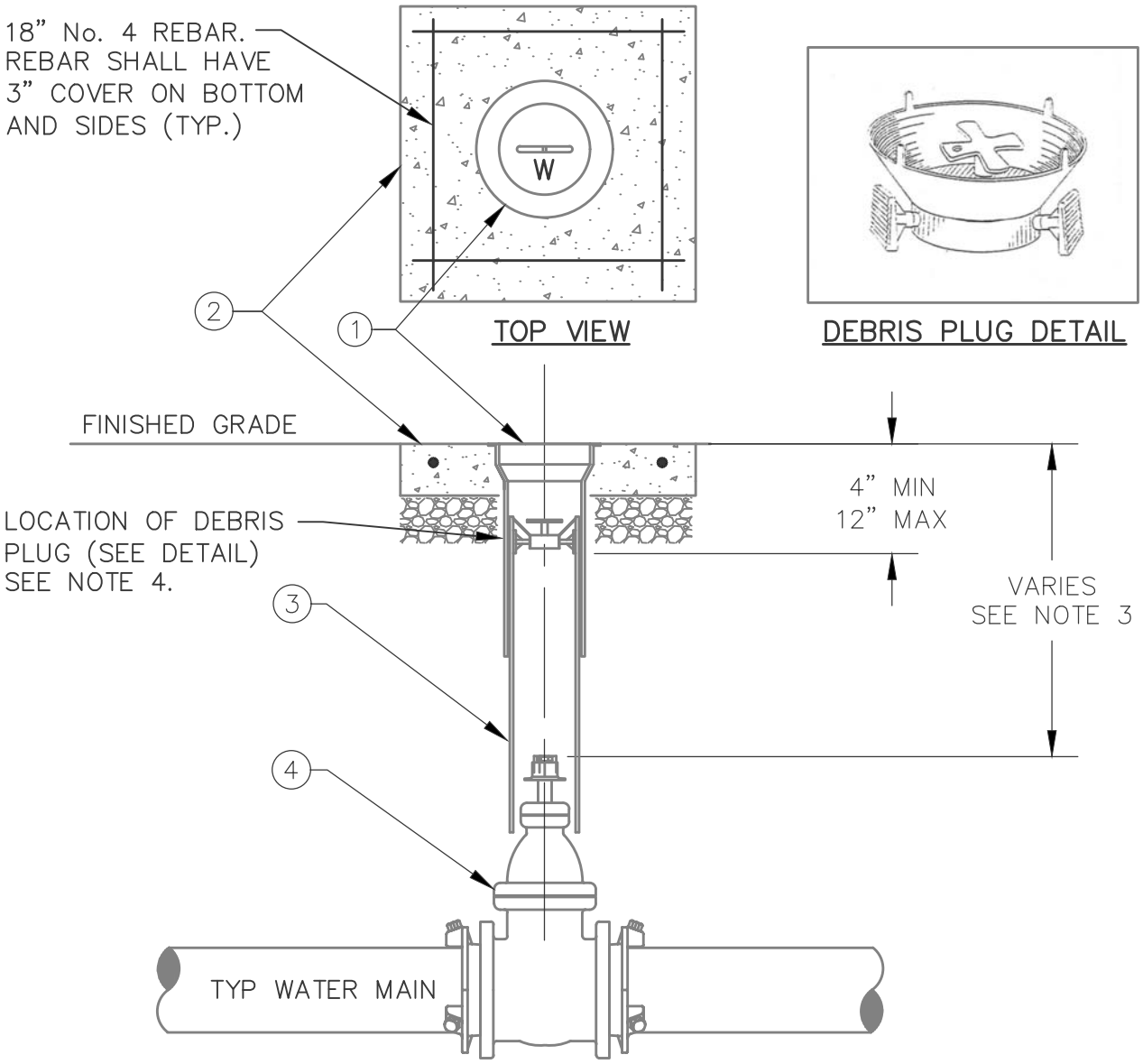
KEYNOTES:

① MJ TEE
② MJ CROSS
③ MJ GATE VALVE
④ MJ BUTTERFLY VALVE
⑤ FOSTER ADAPTOR
⑥ RESTRAINED DIP SPOOL PE: 1'–0" MIN / 2'–0" MAX. TYPICAL

NOTES:

1. VALVES SHALL BE SAME SIZE AS WATER MAIN BEING SUPPLIED.
2. GATE VALVES 8" AND SMALLER. BUTTERFLY VALVES 10" AND LARGER.
3. MAXIMUM SPACING FOR VALVES: 800 FT.
4. VALVES SHALL NOT BE LOCATED IN CURB, GUTTER, OR SIDEWALK AREA.
5. SEE 540–2 FOR VALVE BOX REQUIREMENTS.
6. ALL MECHANICAL JOINTS SHALL BE RESTRAINED.
7. MJ SPOOL OPTION MAY BE USED WITH PRIOR APPROVAL BY THE WATER DEPARTMENT ENGINEER.

Hillsboro Water	TYPICAL WATER VALVE LOCATION	SCALE: NONE DATE: SEPT 2017	540-1



KEYNOTES:

① OLYMPIC FOUNDRY VB910 VALVE BOX AND COVER WITH "W" CAST IN THE TOP SURFACE

② UNPAVED AREAS ONLY: PROVIDE 24" SQUARE BY 5–1/2" THICK CONCRETE PAD CENTERED ON VALVE BOX. INSTALL OVER 4" COMPACTED ¾"–0 CRUSHED ROCK.

③ 6" SCH 40 OR D3034 PVC PIPE RISER WITH END CUT TO FIT OVER VALVE HOUSING, LENGTH AS NECESSARY

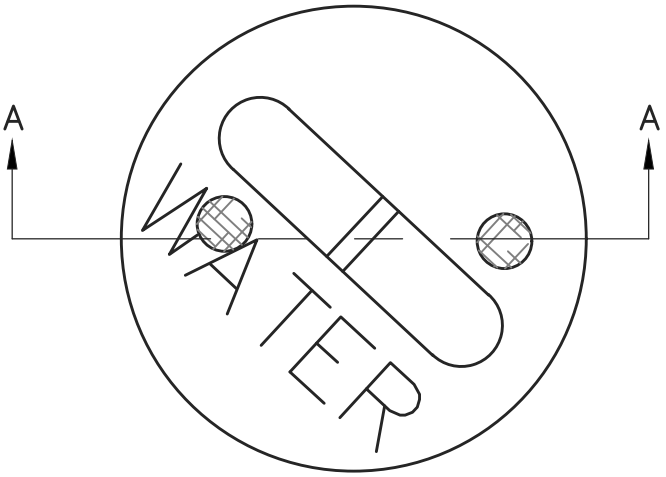
④ MJ GATE VALVE (BUTTERFLY VALVE SIMILAR, NOT SHOWN.)

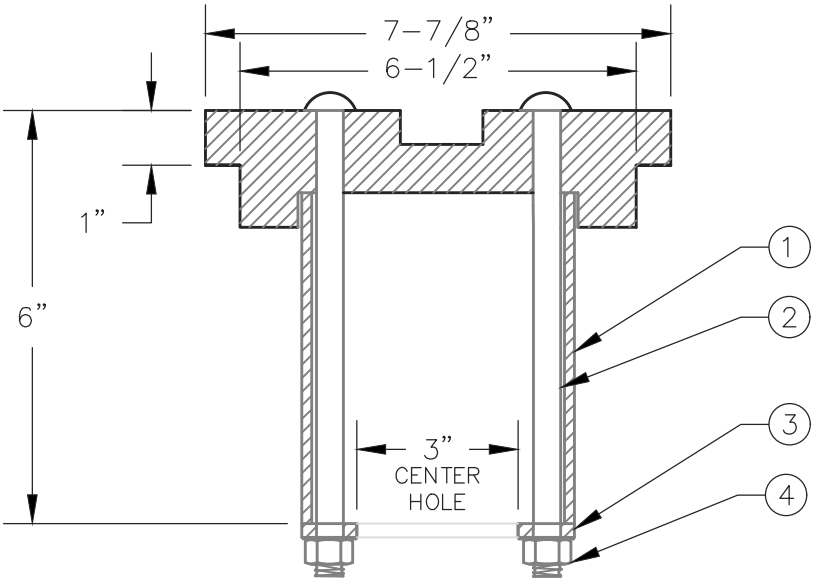
NOTES:

1. CENTER VALVE BOX ON AXIS OF OPERATING NUT AND SET PLUMB WITH FINISHED GRADE.
2. OPERATOR EXTENSION REQUIRED WHEN VALVE NUT IS DEEPER THAN 6 FEET FROM FINISHED GRADE. REFER TO DETAIL 540–4A.
3. CONTRACTOR TO INSTALL DEBRIS PLUG IN PVC RISER PIPE.

Hillsboro Water	**TYPICAL STANDARD VALVE BOX SETTING**	**SCALE: NONE**	**540-2**
		DATE: SEPT 2017	

FILENAME: 540–2 DRAFT.DWG





SECTION A – A

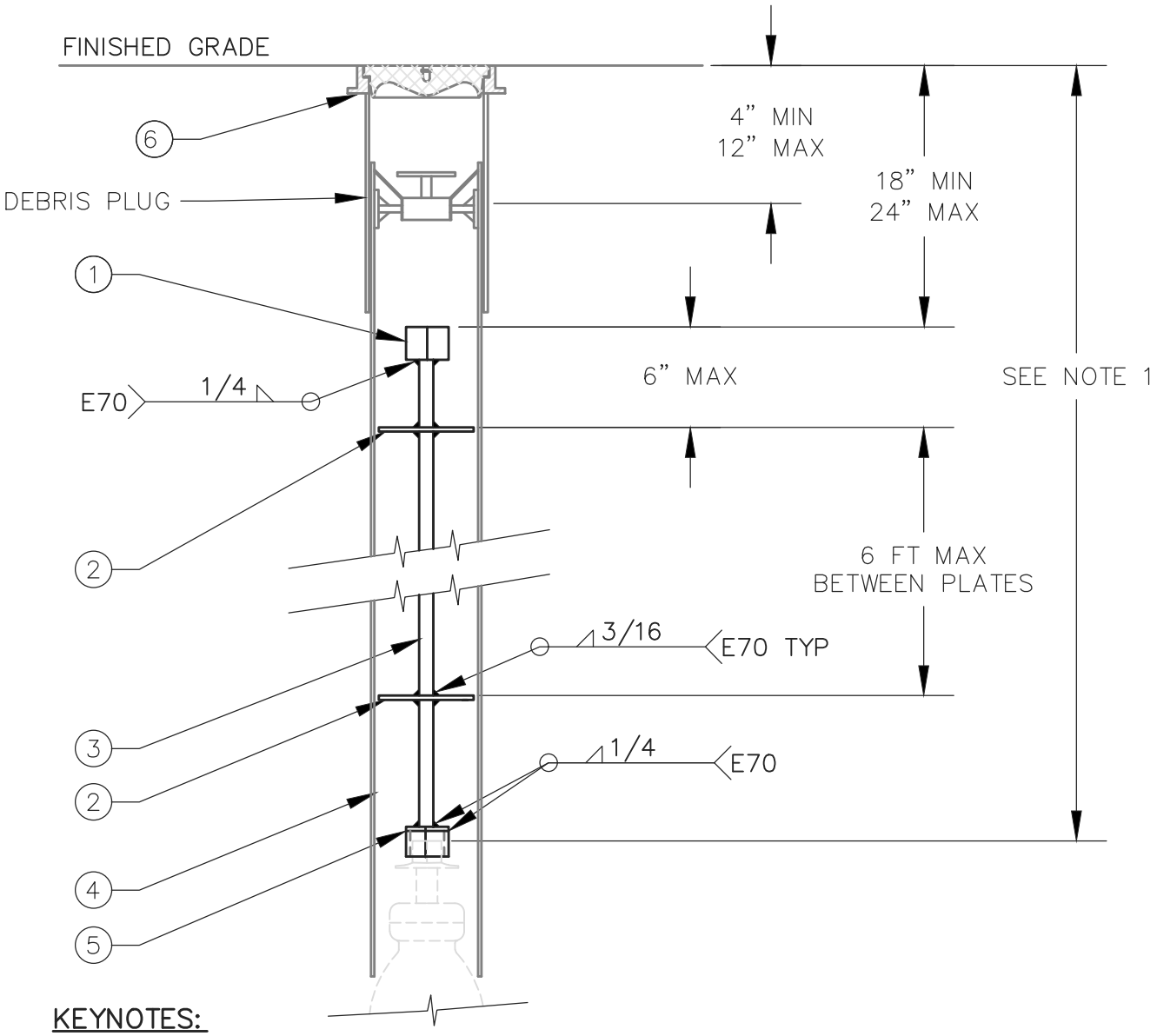
KEYNOTES:

① 5" OD STEEL PIPE
② ½" CARRIAGE BOLT
③ ¼" STEEL PLATE
④ ½" NYLON LOCKING NUT

NOTES:

1. USE OF HIGH VOLUME TRAFFIC LIDS MUST BE APPROVED BY WATER DEPARTMENT.
2. LIDS SHALL BE PURCHASED FROM THE WATER DEPT WHEN REQUIRED.

Hillsboro Water	**HIGH VOLUME TRAFFIC LID FOR 910 SERIES VALVE BOX**	**SCALE: NONE**	**540-3**
		DATE: SEPT 2017	



KEYNOTES:

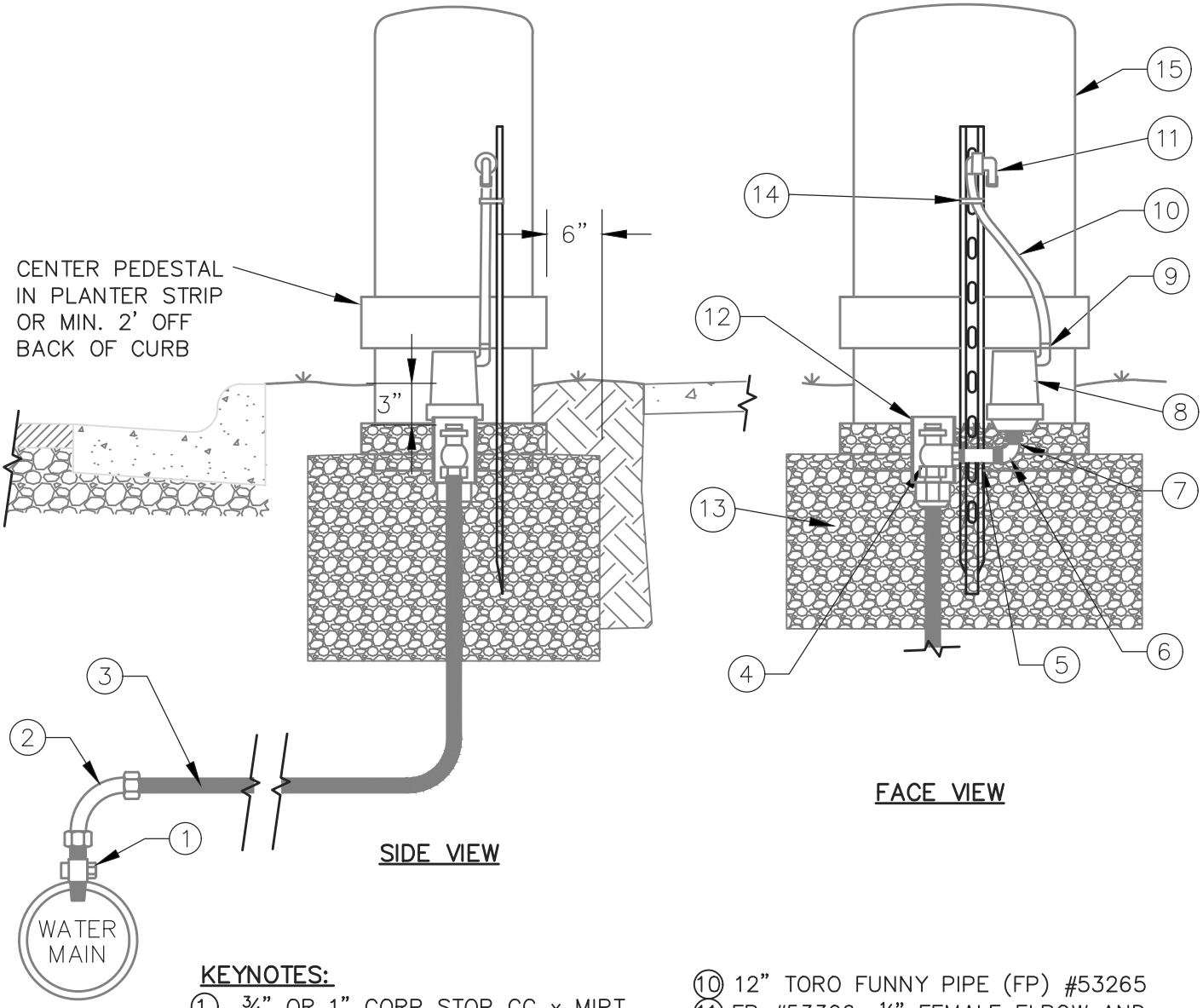
① 2" SQUARE STEEL STOCK 2" LONG
② 1/4" STEEL PLATE ROCK GUARD SHALL BE 3/8" SMALLER DIAMETER THAN I.D. OF PIPE RISER (TYP)
③ 2" x 2" x .120 WALL SQUARE TUBE OR 1" SCHED 80 STEEL PIPE, HOT DIP GALVANIZED AFTER FABRICATION
④ 8" D3034 PVC PIPE RISER, ONE CONTINUOUS LENGTH AS REQUIRED
⑤ 2" SQUARE SOCKET MADE WITH 1/4" THICK STEEL PLATE OR 2 1/2" x 2 1/2" x .180 WALL T.S.
⑥ 8" OVERSIZED CAST IRON VALVE BOX AND LID.

NOTES:

1. OPERATOR EXTENSION REQUIRED WHEN VALVE NUT IS DEEPER THAN 6 FEET FROM FINISHED GRADE.
2. AN ALTERNATE FIBERGLASS VALVE OPERATOR EXTENSION PRODUCT IS APPROVED FOR USE. SEE THE WATER DEPARTMENT APPROVED PRODUCTS LIST FOR MORE DETAILS.
3. STEEL MATERIALS SHALL BE GRADE ASTM A36 OR EQUIVALENT.

Hillsboro Water	VALVE OPERATOR EXTENSION	SCALE: NONE DATE: SEPT 2017	540-4

FILENAME: 540-4 DRAFT.DWG



KEYNOTES:

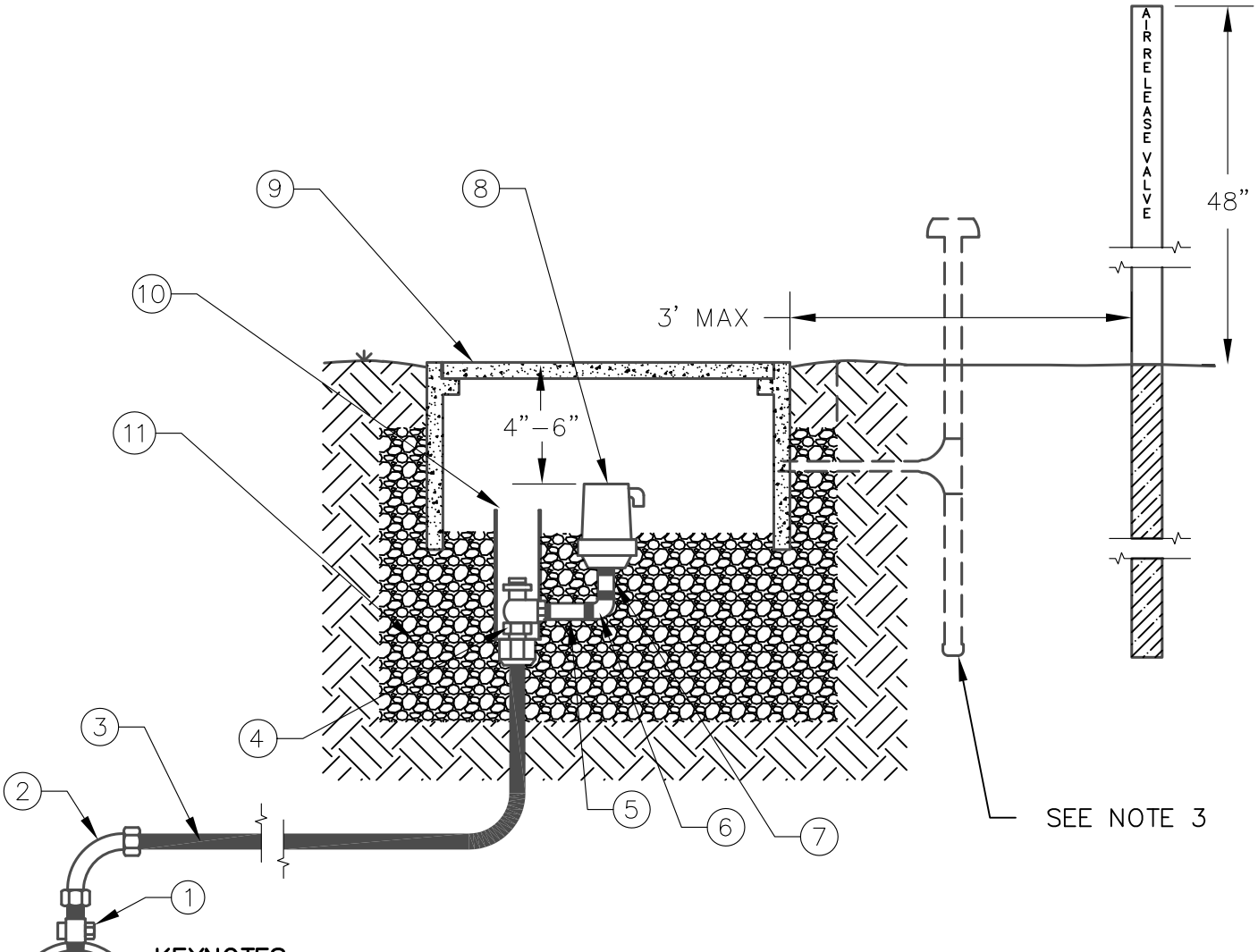
1. ¾" OR 1" CORP STOP CC x MIPT
2. ¾" OR 1" FIPT x CTS 90° ELL
3. ¾" OR 1" TYPE K SOFT COPPER TUBING
4. ¾" OR 1" ANGLE METER STOP BALL VALVE WITH CTS INLET W/1" x ¾" BRASS BRUSHING
5. ¾" OR 1" x 3" BRASS NIPPLE
6. ¾" OR 1" BRASS 90° STREET ELL
7. ¾" OR 1" BRASS COUPLER
8. ¾" OR 1" COMB. AIR VALVE (CARV)
9. WATTS MODEL PL-387A NYLON½" BARB TO ⅜" MIP ADAPTER *
10. 12" TORO FUNNY PIPE (FP) #53265
11. FP #53306 ½" FEMALE ELBOW AND #53304 ½" MALE ELBOW W/40 MESH BRASS SCREEN WRAPED ON NIPPLE, HELD W/ NYLON WIRE TIE
12. 2"-6" PVC PIPE W/ SLOT FOR SERVICE LINE
13. ¾"-0" GRANULAR DRAIN MATERIAL
14. NYLON WIRE TIE
15. CHALES INDUSTRIES, LTD NON-LOVERED VERTICAL PEDESTAL MODEL NUMBER 103 COLORED - DARK GREEN W/BRACKET OPTION 'A'

NOTE:

1. A MINIMUM 1% UPWARD SLOPE SHALL BE MAINTAINED ON THE COPPER TUBING FROM THE WATER MAIN TO THE CARV.

Hillsboro Water	¾" OR 1" COMBINATION AIR AND VACUUM VALVE (CARV)	SCALE: NONE	540-5A
		DATE: SEPT 2017	

FILENAME: 540-5.DWG



KEYNOTES:

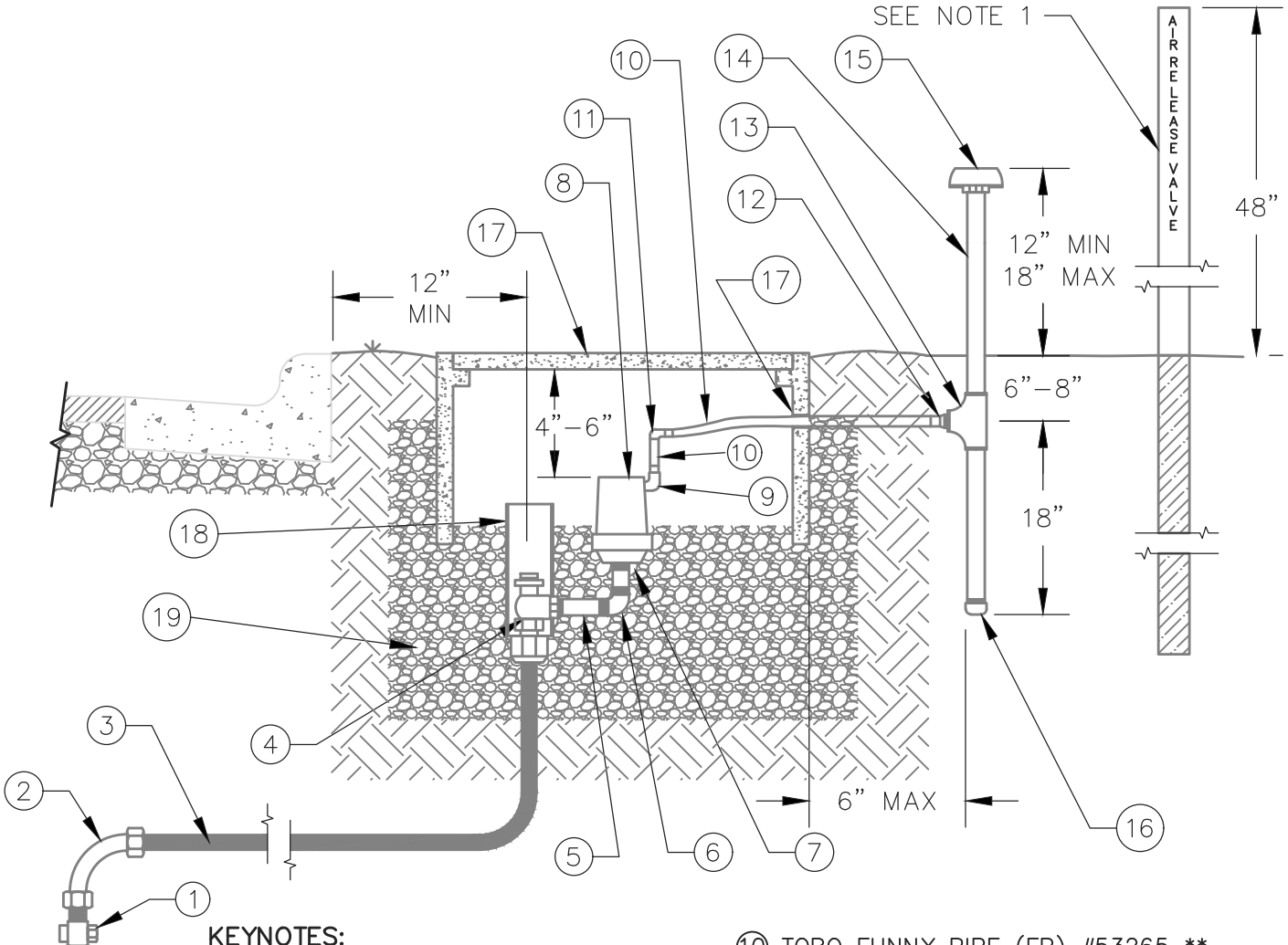
① ¾" OR 1" CORP STOP CC x MIPT
② ¾" OR 1" FIPT x CTS 90° ELL
③ ¾" OR 1" TYPE K SOFT COPPER TUBING (SEE NOTE 2)
④ ¾" OR 1" ANGLE METER STOP BALL VALVE WITH CTS INLET w/1"x¾" BRASS BUSHING
⑤ ¾" OR 1" x 6" BRASS NIPPLE
⑥ ¾" OR 1" BRASS 90° ELL
⑦ ¾" OR 1"x 3" BRASS NIPPLE W/FIPT COUPLER
⑧ ¾" OR 1" AIR RELEASE VALVE (ARV) A.R.I. MODEL S–050V
⑨ WATER METER BOX 10"x15"x12" W/SOLID COVER. MFR: ARMORCAST OR EQUIV.
⑩ 2"–6" PVC PIPE W/ SLOT FOR SERVICE LINE
⑪ ¾"–0" GRANULAR DRAIN MATERIAL

NOTES:

1. IN RURAL AREAS (UNDEVELOPED) INSTALL BLUE–COLORED CARSONITE STAKE WITH "AIR RELEASE VALVE" IN ONE–INCH BLACK LETTERS ON BOTH SIDES, BY WATER DEPARTMENT STAFF. LOCATE POST WITHIN 3 FEET OF THE AIR RELEASE METER BOX.
2. A MINIMUM 1% UPWARD SLOPE SHALL BE MAINTAINED ON THE COPPER TUBING FROM THE MAINLINE TO THE ARV.
3. AIR VENT PIPE REQUIRED IN AREAS OF HIGH GROUND WATER; USE DETAIL 540–5.

Hillsboro Water	¾" OR 1" AIR RELEASE VALVE (ARV)	SCALE: NONE DATE: JULY 2018	540-5B

FILENAME: 540–5B.DWG



KEYNOTES:

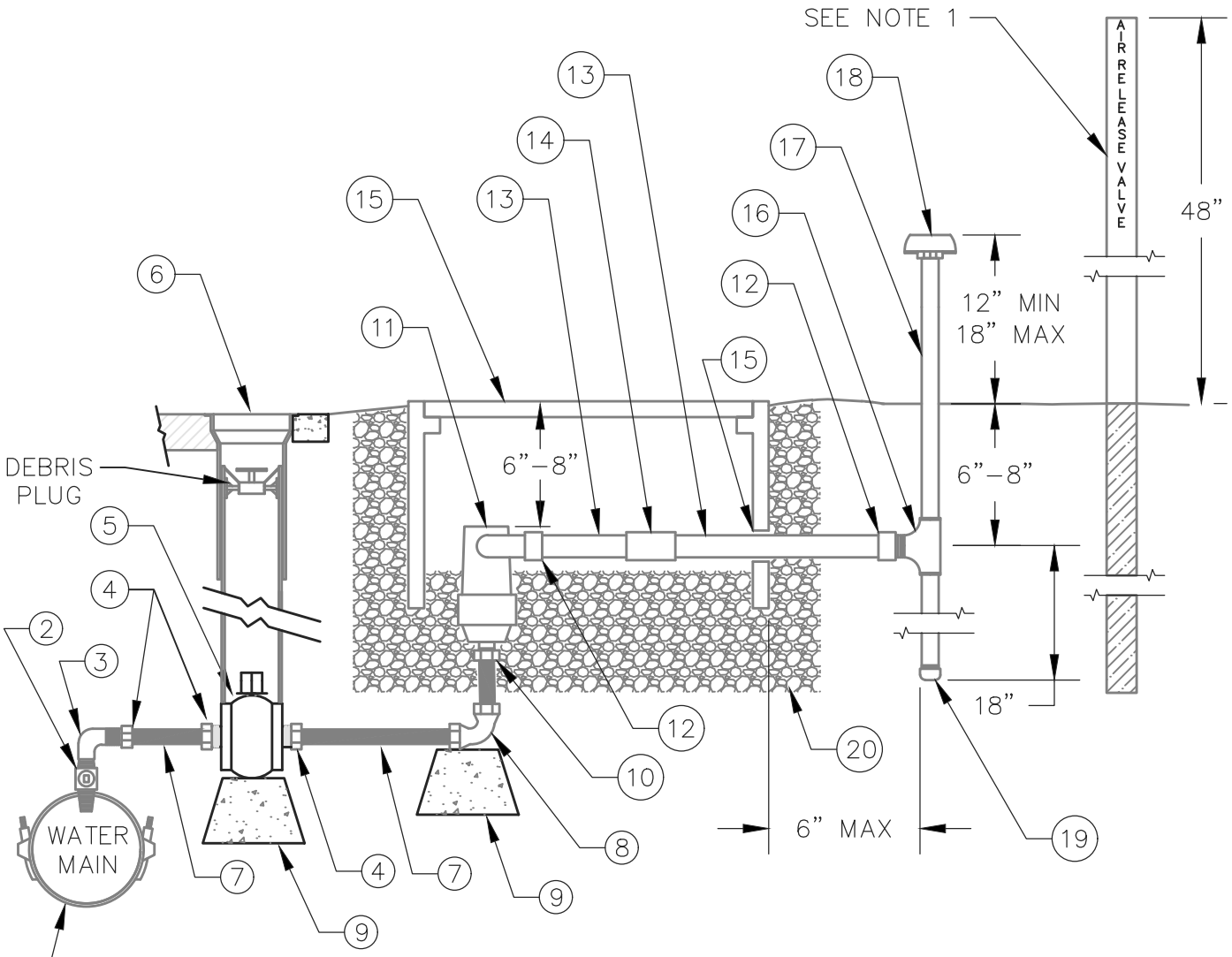
1. ¾" OR 1" CORP STOP CC x MIPT
2. ¾" OR 1" FIPT x CTS 90° ELL
3. ¾" OR 1" TYPE K SOFT COPPER TUBING
4. ¾" OR 1" ANGLE METER STOP BALL VALVE WITH CTS INLET W/1" x ¾" BRASS BUSHING
5. ¾" OR 1" x 3" BRASS NIPPLE
6. ¾" OR 1" BRASS 90° ELL
7. ¾" OR 1" x 3" BRASS NIPPLE W/ BRASS COUPLER
8. ¾" OR 1" COMB. AIR VALVE (CARV)
9. WATTS MODEL A–387A NYLON ½" BARB TO ⅜" MIP ADAPTER *
10. TORO FUNNY PIPE (FP) #53265 **
11. FP #53306 ½" FEMALE ELBOW AND #53388 ½" MALE ADAPTER **
12. FP #53389 ¾" MALE ADAPTER **
13. ¾" GALV. OUTLET TEE
14. ¾" GALV. PIPE
15. ¾" SCREENED TANK VENT
16. ¾" GALV. PIPE CAP
17. WATER METER BOX 10"x15"x12" W/SOLID COVER. ARMORCAST OR EQUIV. DRILL 1" DIA HOLE FOR VENT PIPE.
18. 2"–6" PVC PIPE W/ SLOT FOR SERVICE LINE
19. ¾"–0" GRANULAR DRAIN MATERIAL

NOTES:

1. IN RURAL AREAS (UNDEVELOPED) INSTALL BLUE–COLORED CARSONITE STAKE WITH "AIR RELEASE VALVE" IN ONE–INCH BLACK LETTERS ON BOTH SIDES, BY WATER DEPARTMENT STAFF. LOCATE POST WITHIN 3 FEET OF THE AIR RELEASE METER BOX.
2. *ALTERNATE: WATTS MODEL A–785 BRASS ⅜" x CLOSE NIPPLE, WATTS A–815 (103–R) REDUCING COUPLING ½" FIP x ⅜" FIP, AND FP #53388 ½" MALE ADAPTER.
3. A MINIMUM 1% UPWARD SLOPE SHALL BE MAINTAINED ON THE COPPER TUBING FROM THE WATER MAIN TO THE CARV.

Hillsboro Water	¾" OR 1" COMBINATION AIR AND VACUUM VALVE (CARV)	SCALE: NONE	540-5
		DATE: SEPT 2017	

FILENAME: 540–5.DWG



KEYNOTES:

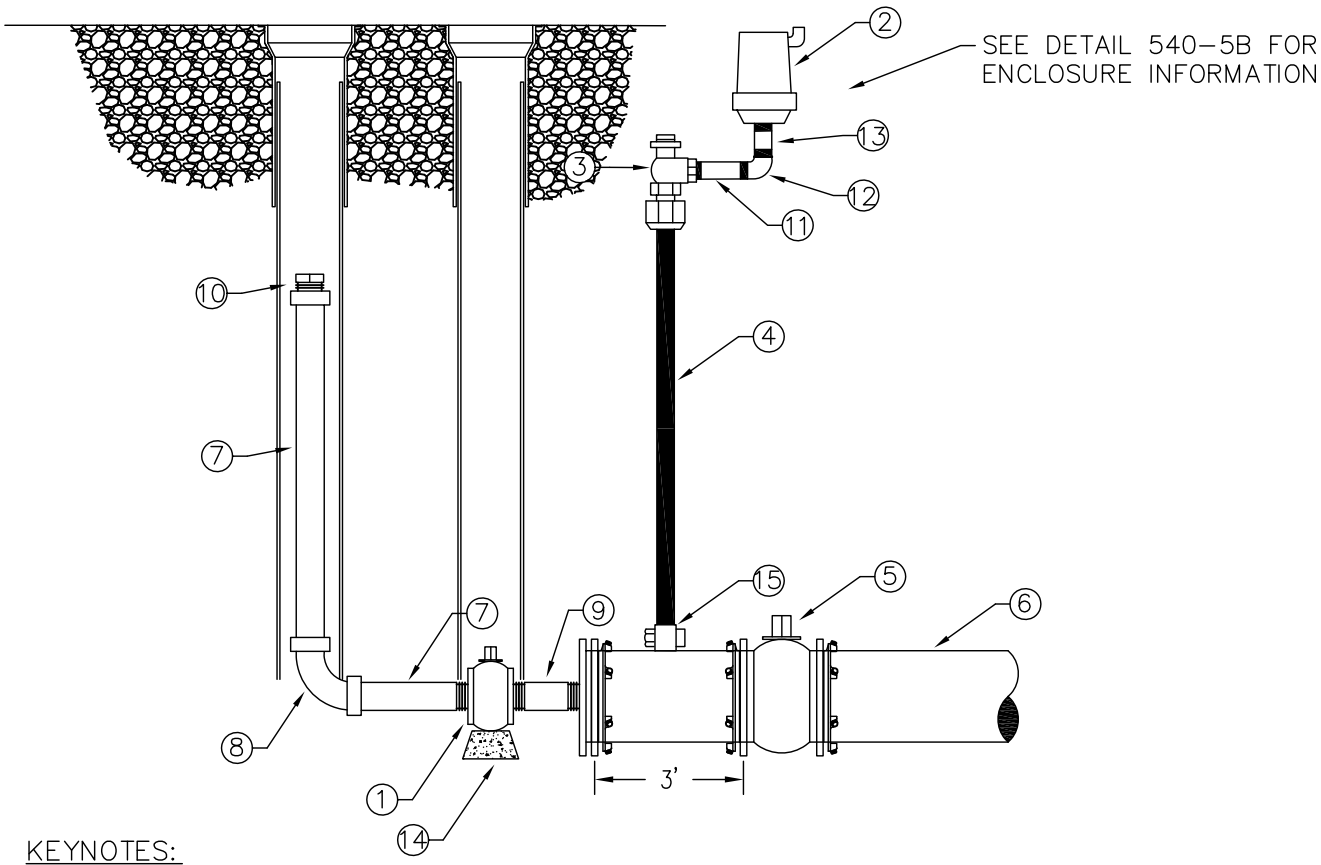
1. 2" TAPPING SADDLE
2. 2" CORP STOP MIPT x MIPT
3. 2" BRASS 90° STREET ELL
4. 2" CTS x MIPT COUPLING
5. 2" GATE VALVE w/2" OPERATING NUT FIPT x FIPT
6. VALVE BOX PER 540–2
7. 2" TYPE K RIGID COPPER PIPE (SEE NOTE 2)
8. 2" BRASS CTS x CTS 90° ELL
9. 8"x8"x8" CONCRETE PIER BLOCK
10. 2" CTS x FIPT COUPLING
11. 2" COMBINATION AIR VALVE (CARV) A.R.I. MODEL D–040–P
12. 1 ½" PVC SCH 40 MIP x SLIP (GLUE)
13. 1 ½" PVC SCH 40 PIPE
14. 1 ½" PVC COMPRESSION COUPLIN
15. WATER METER BOX 12" x 20" x 12" MFR: ARMORCAST OR EQUIVALENT, DRILL 2" DIA HOLE FOR VENT PIPE
16. 1 ½" GALV. OUTLET TE
17. 1 ½" GALV. PIPE
18. 1 ½" SCREENED TANK VEN
19. 1 ½" GALV. PIPE CAP
20. ¾"–0" GRANULAR DRAIN MATERIAL

NOTES:

1. IN RURAL AREAS (UNDEVELOPED) INSTALL BLUE–COLORED CARSONITE STAKE WITH "AIR RELEASE VALVE" IN ONE–INCH BLACK LETTERS ON BOTH SIDES, BY WATER DEPARTMENT STAFF. LOCATE POST WITHIN 3 FEET OF THE AIR RELEASE METER BOX.
2. A MINIMUM 1% UPWARD SLOPE SHALL BE MAINTAINED ON THE COPPER PIPE FROM THE WATER MAIN TO THE CARV.

Hillsboro Water	2" COMBINATION AIR & VACUUM VALVE (CARV)	SCALE: NONE DATE: SEPT 2017	540-6

FILENAME: 540–6.DWG



KEYNOTES:

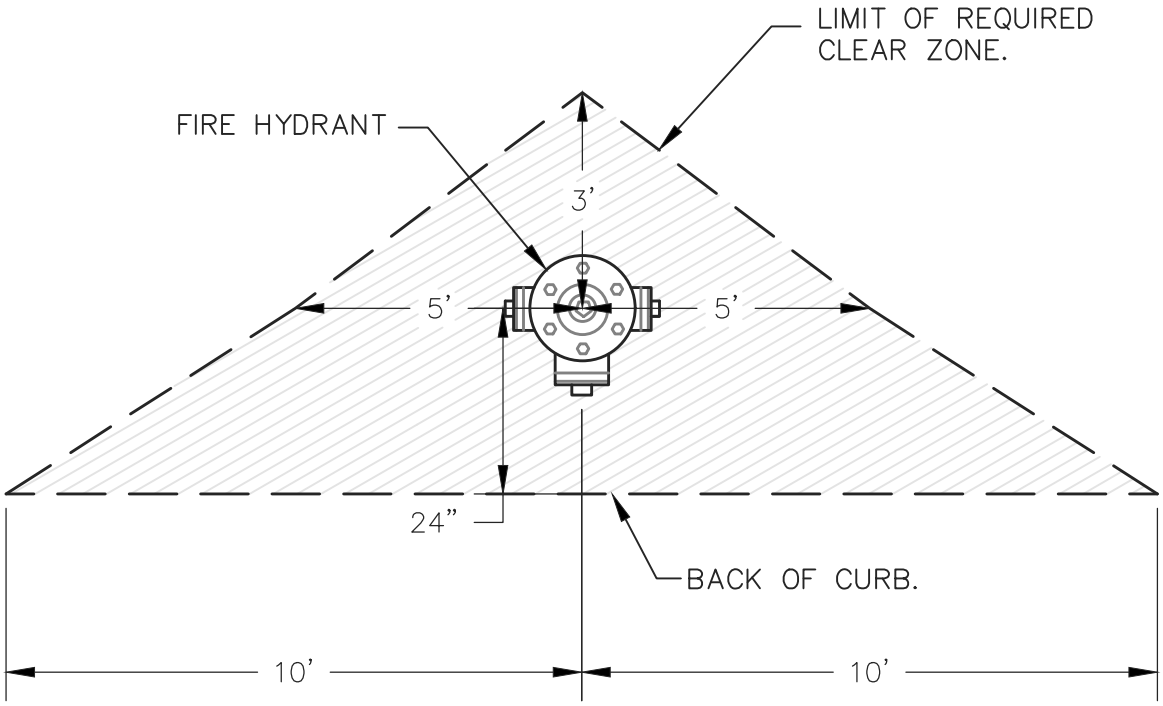
1. 2" GATE VALVE WITH BLOW OFF
2. 3/4" – 1" ARV/CARV
3. 3/4" OR 1" ANGLE METER STOP BALL VALVE WITH CTS INLET w/1"x3/4" BRASS BUSHING
4. 3/4" OR 1" TYPE K SOFT COPPER TUBING
5. GATE VALVE – LINE SIZE
6. WATER MAIN
7. 2" GALVANIZED PIPE NIPPLE (LENGTH WILL VARY)
8. 2" FIPT 90° GALVANIZED ELBOW
9. 2" X 12" GALVANIZED PIPE NIPPLE
10. 2" BRASS COUPLER AND PLUG, HAND TIGHT
11. 3/4" OR 1" x 6" BRASS NIPPLE
12. 3/4" OR 1" BRASS 90° ELL
13. 3/4" OR 1" x 3" BRASS NIPPLE w/FIPT COUPLER
14. 8"x8"x8" CONCRETE PIER BLOCK OR EQUIVALENT SUPPORT ON UNDISTURBED EARTH
15. 3/4" OR 1" CORP STOP CC X MIPT

NOTES:

1. IN RURAL AREAS (UNDEVELOPED) INSTALL BLUE-COLORED CARSONITE STAKE WITH "AIR RELEASE VALVE" IN ONE-INCH BLACK LETTERS ON BOTH SIDES, BY WATER DEPARTMENT STAFF. LOCATE POST WITHIN 3 FEET OF THE AIR RELEASE METER BOX.
2. TEMPORARY TERMINUS AIR VENT PIPE REQUIRED AT THE HIGH END OF THE WATER MAIN; USE DETAIL 540-5. WHEN LINE IS EXTENDED IN THE FUTURE, ARV/CARV WILL BE REMOVED. ANGLE STOP WILL BE USED FOR PRESSURE TESTING AND CHLORINATION OF THE NEW LINE.
3. UPON SUCCESSFUL COMPLETION OF TESTING, CORP TO BE REMOVED AND PLUG INSTALLED.

Hillsboro Water	PHASE BREAK VALVE TERMINATION	SCALE: NONE DATE: JULY 2018	540-7

FILENAME: 540-7.DWG



NOTES:

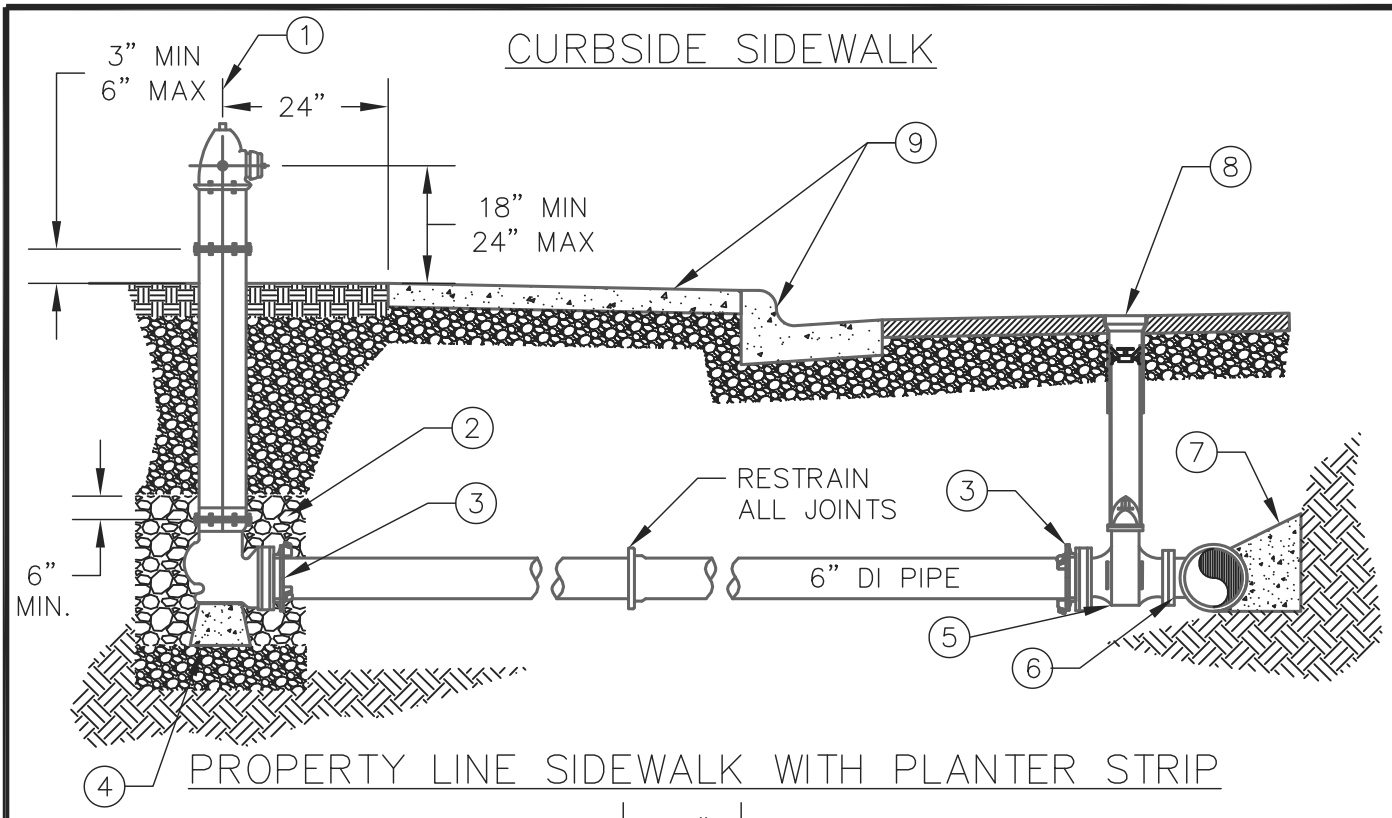
1. THE CLEAR ZONE PROHIBITS THE FOLLOWING:
   - VEHICLE PARKING
   - FENCES
   - TREES
   - LARGE SHRUBS
   - RETAINING WALLS
   - ANYTHING ELSE THAT MAY INTERFERE WITH OPERATION OF HYDRANT
2. THE CLEAR ZONE ALLOWS THE FOLLOWING:
   - LAWN GRASS
   - MULCH
   - BARKDUST
   - GROUND COVER
   - LOW PLANTINGS

   PROPERTY OWNERS SHOULD BE AWARE THAT THE GROUND COVER COULD BE DAMAGED WHEN THE HYDRANT IS USED OR WHEN HYDRANT MAINTENANCE WORK IS PERFORMED.

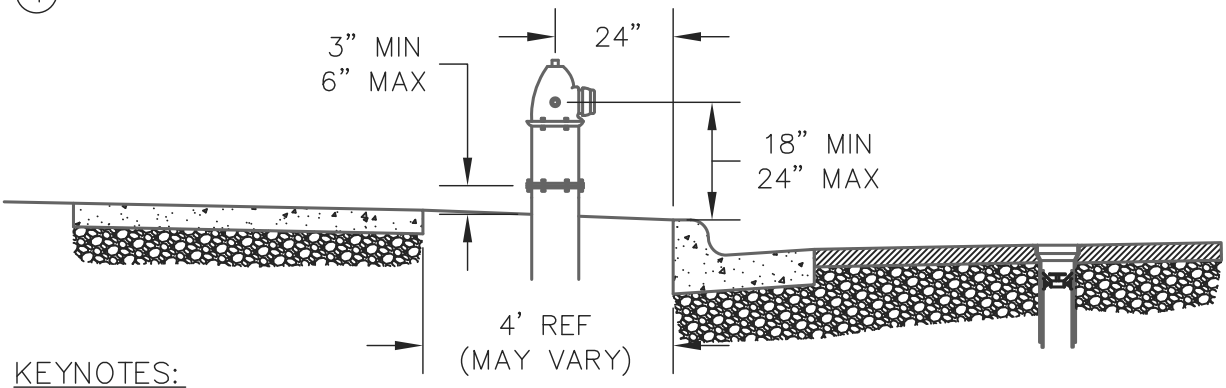
Hillsboro Water	**FIRE HYDRANT CLEAR ZONE**	**SCALE: NONE**	**550-1**
		DATE: SEPT 2017	

FILENAME: 550-1 DRAFT.DWG

CURBSIDE SIDEWALK



PROPERTY LINE SIDEWALK WITH PLANTER STRIP



KEYNOTES:

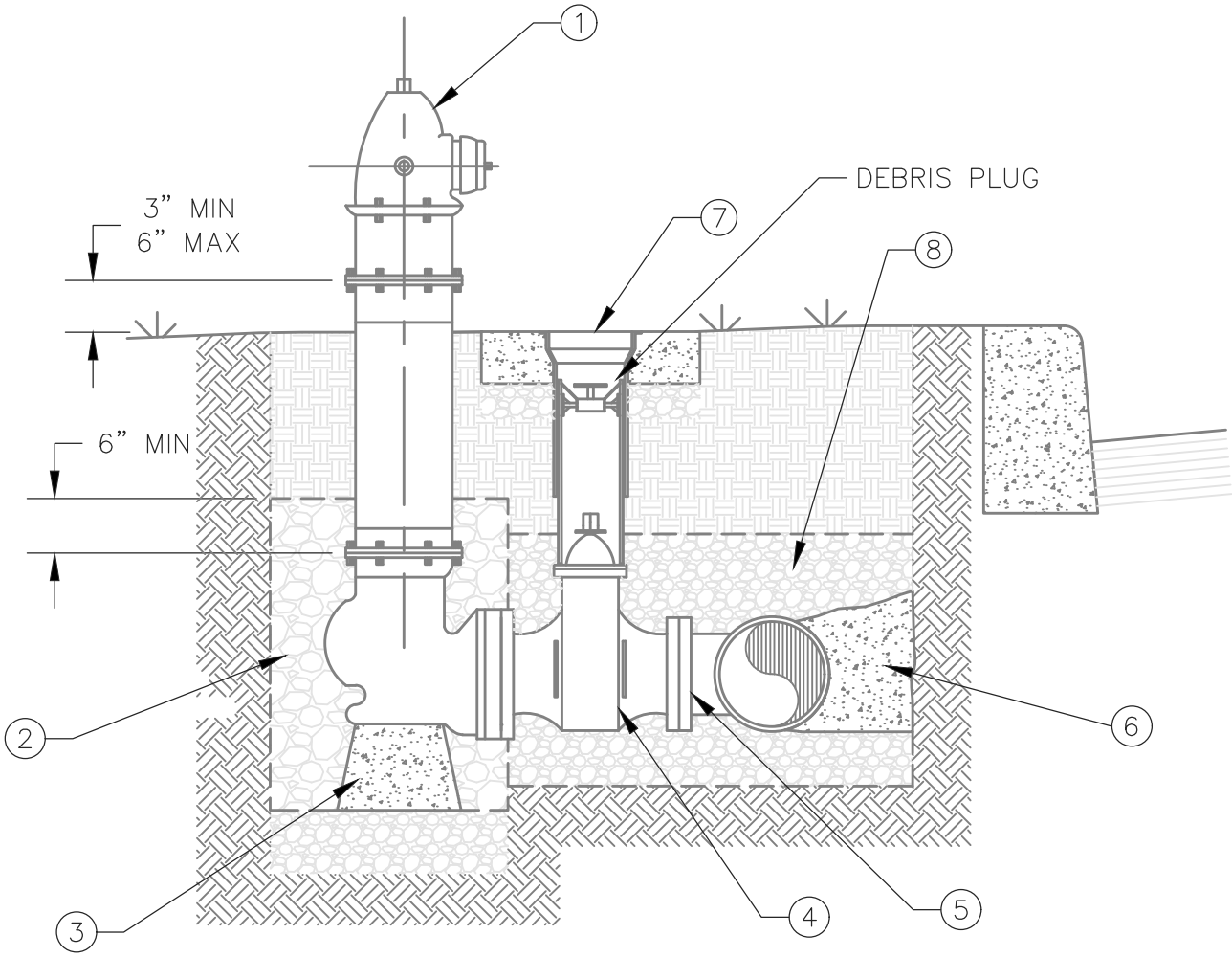
1. APPROVED HYDRANT ASSEMBLY PER STANDARD SPECIFICATIONS
2. GRANULAR DRAIN MATERIAL BACKFILL, 4 CU FT MINIMUM
3. TYPICAL 6" MEGALUG RETAINER OR EQUAL AT EACH PIPE FITTING
4. 12"x12"x8"H CONCRETE PIER BLOCK PLACED ON UNDISTURBED NATIVE SOIL
5. 6" MJ x MJ GATE VALVE, TYP. USE MJ X FLG FOR TAPPING SLEEVE
6. WATER MAIN SIZE MJ x 6" MJ TEE OR TAPPING SLEEVE, SEE DETAIL 530-2
7. REFER TO TAPPING SLEEVE DETAIL 530-2
8. REFER TO VALVE BOX DETAIL 540-2.
9. TYPICAL CURB AND GUTTER

NOTES:

1. REFER TO 550-1 FOR HYDRANT CLEAR ZONE REQUIREMENTS.
2. HYDRANT BURY DEPTH MAXIMUM SHALL BE 6 FT AND MINIMUM SHALL BE 30".
3. WHEN FINAL LIFT OF HMAC IS PLACED, CONTRACTOR TO PLACE A BLUE REFLECTOR BUTTON FOR THE FIRE DEPARTMENT. SEE DETAIL 550-4 FOR PLACEMENT.

Hillsboro Water	FIRE HYDRANT STANDARD INSTALLATION	SCALE: NONE DATE: SEPT 2017	550-2

FILENAME: 550-2 DRAFT.DWG



KEYNOTES:

1. APPROVED HYDRANT ASSEMBLY PER STANDARD SPECIFICATIONS
2. GRANULAR DRAIN MATERIAL BACKFILL, 4 CU FT MINIMUM
3. 12"x12"x8"H CONCRETE PIER BLOCK PLACED ON UNDISTURBED NATIVE SOIL
4. 6" FLG x FLG GATE VALVE
5. WATER MAIN SIZE MJ x 6" FLG TEE OR TAPPING SADDLE
6. REFER TO TAPPING SADDLE DETAIL 530–2
7. REFER TO VALVE BOX SETTING DETAIL 540–2
8. REFER TO TRENCH BACKFILL DETAIL 520–1

NOTES:

1. REFER TO 550–1 FOR HYDRANT CLEAR ZONE REQUIREMENTS.
2. HYDRANT BURY DEPTH SHALL BE A MAXIMUM OF 6 FT AND A MINIMUM OF 30".
3. FLANGE HYDRANT USE IS DEPENDENT ON SPACE CONSTRAINTS AND REQUIRES WATER DEPARTMENT APPROVAL.
4. THE CONTRACTOR SHALL NOTIFY THE WATER DEPARTMENT WHEN THE FINAL LIFT OF HMAC IS TO BE PLACED SO A BLUE REFLECTOR BUTTON CAN BE INSTALLED FOR THE FIRE DEPARTMENT.

Hillsboro Water	**FIRE HYDRANT FLANGE JOINT INSTALLATION**	**SCALE: NONE**	**550-3**
		DATE: SEPT 2017	

FILENAME: 550–3 DRAFT.DWG

FIGURE 1
TWO LANE STREET

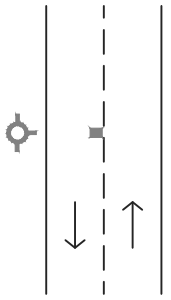


FIGURE 2
MULTI–LANE STREET

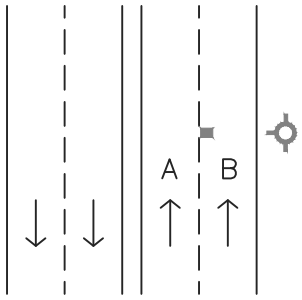


FIGURE 3
TWO LANE STREET AT INTERSECTION

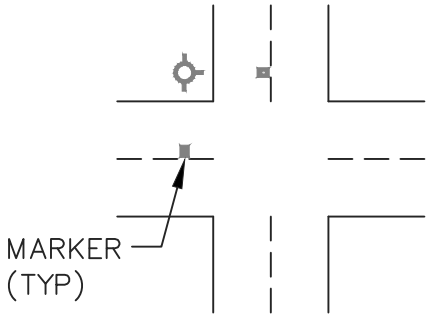


FIGURE 4
ONE–WAY STREET

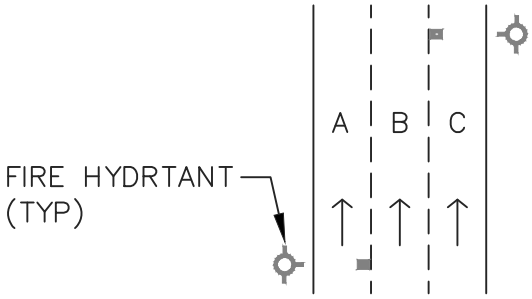


FIGURE 5
MULTI–LANE STREET WITH TURN LANE

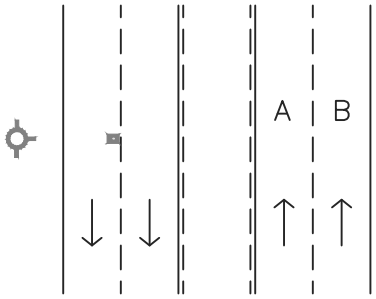
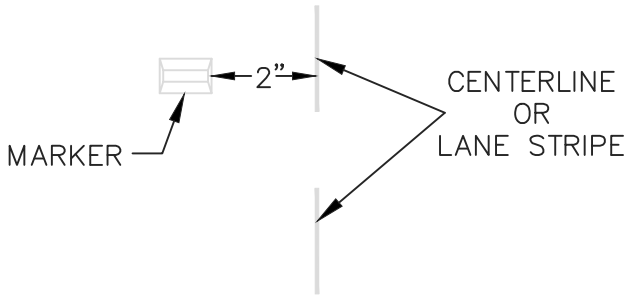


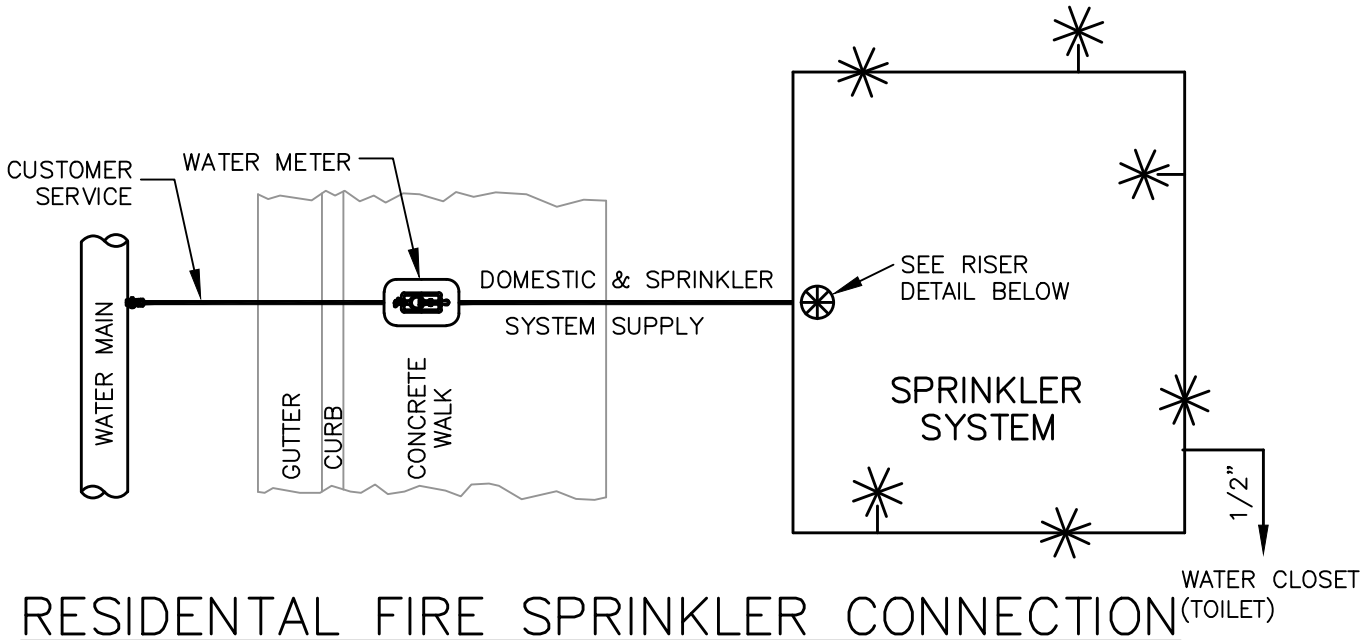
FIGURE 6
HYDRANT MARKER DETAIL



NOTES:

1. IF HYDRANT IS LOCATED WITHIN THE RADIUS OF AN INTERSECTION, PLACE A MARKER ON EACH ROADWAY IN THE CENTER LANES CLOSEST TO THE HYDRANT.
2. MARKER IS PLACED PERPENDICULAR (90°) TO THE HYDRANT.
3. THE CONTRACTOR TO SUPPLY THE BLUE REFLECTORS. THE CONTRACTOR TO SUPPLY THE MELT DOWN THERMOPLASTIC PADS IF 10 OR MORE ARE REQUIRED. IF LESS THAN 10, THE WATER DEPARTMENT TO SUPPLY THE PADS.

Hillsboro Water	**TYPICAL HYDRANT MARKER LOCATIONS**	**SCALE: NONE** **DATE: SEPT 2017**	**550-4**

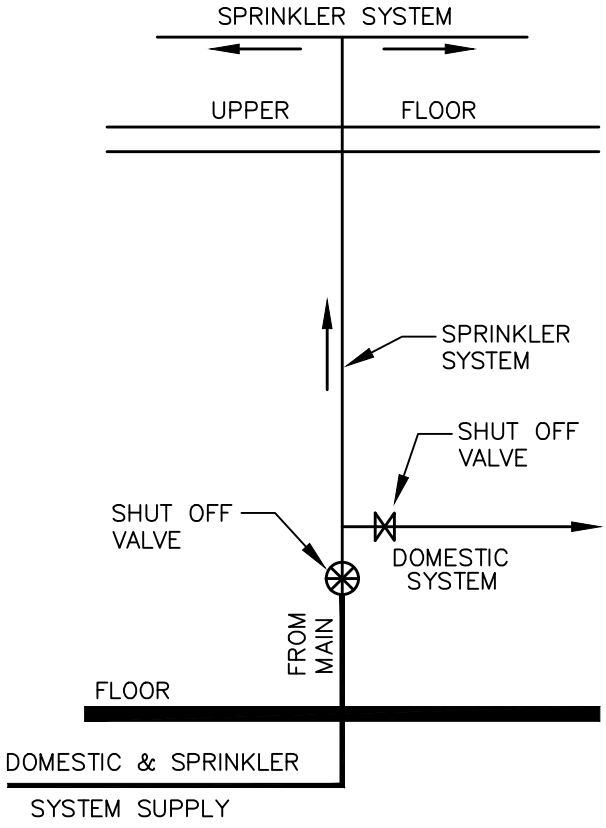


RESIDENTAL FIRE SPRINKLER CONNECTION

1 & 2 FAMILY DWELLINGS AND TOWNHOUSES DESIGNED OUT OF THE OREGON RESIDENTIAL SPECIALTY CODE

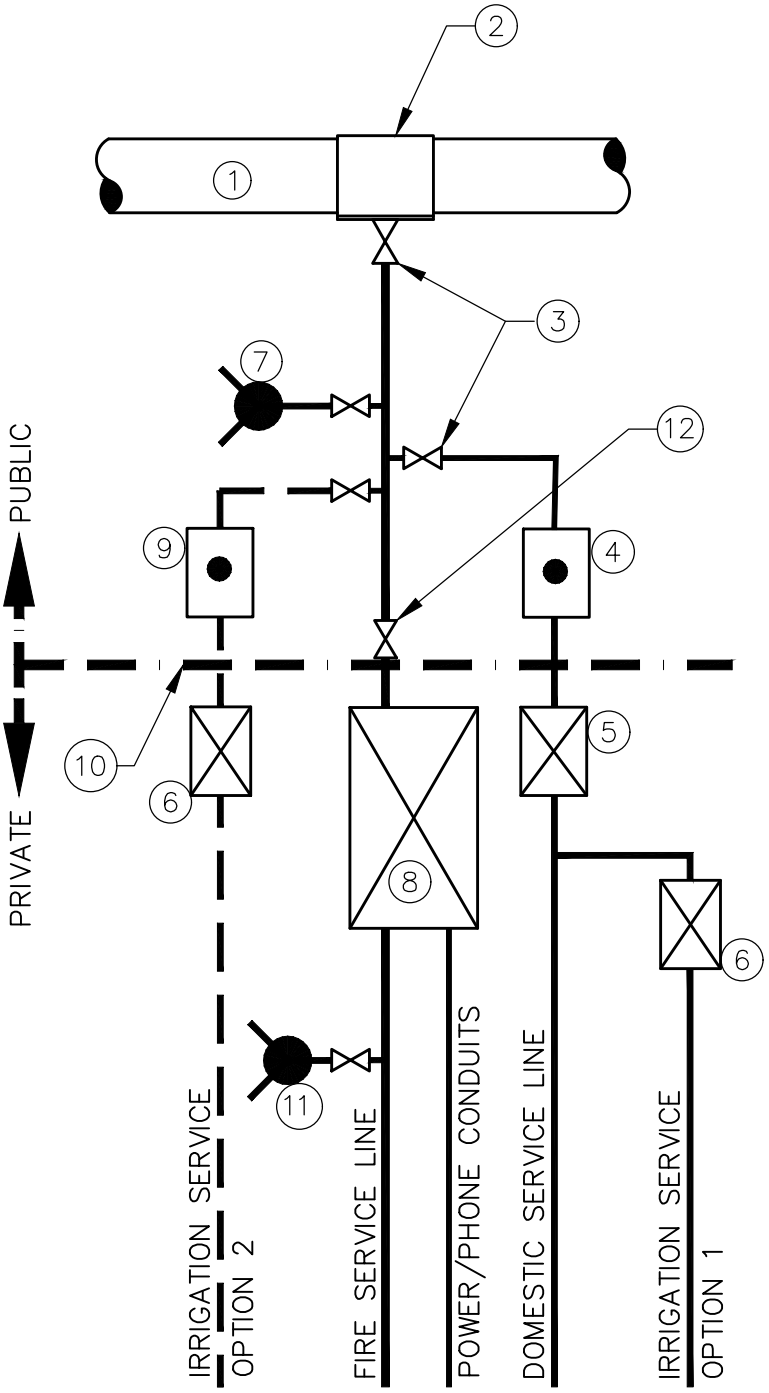
NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF HILLSBORO CONSTRUCTION STANDARDS AND THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) NFPA13D FIRE SPRINKLER STANDARD.
2. FIRE SERVICE PIPING AND APPURTENANCES SHALL BE INSPECTED WITHIN THE RIGHT-OF-WAY BY THE WATER DEPARTMENT AND ON PRIVATE PROPERTY BY THE HILLSBORO BUILDING DEPARTMENT INSPECTOR.
3. BACK FLOW DEVICES WILL NOT BE REQUIRED FOR A MULTIPURPOSE OR PASSIVE PURGE SYSTEM CONNECTED TO AT LEAST ONE WATER CLOSET.
4. METER CHARGE AND MONTHLY FEE SHALL BE FOR THE SIZE OF METER INSTALLED. SERVICE CONNECTION CHARGES SHALL BE FOR A 5/8" METER. UNLESS THE CUSTOMER REQUIRES A LARGER DOMESTIC CONNECTION, THEN THE GREATER CONNECTION CHARGES SHALL APPLY.
5. ALL UNDERGROUND PIPING SHALL BE PER NFPA 13D. ALL ABOVE GROUND PIPING SHALL BE PER NFPA13D.
6. ALL ABOVE GROUND SYSTEM COMPONENTS SHALL MEET ALL OREGON PLUMBING SPECIALTY CODE REQUIREMENTS FOR POTABLE SYSTEMS.
7. ALL ABOVE GROUND PIPING AND VALVES SHALL BE PROTECTED TO PREVENT FREEZING.
8. ALL PIPING PASSING THROUGH A SLAB SHALL PASS THROUGH A SLEEVE FOR THE FULL THICKNESS OF THE SLAB. THE SLEEVE SHALL HAVE AN INSIDE DIAMETER OF $\frac{1}{2}$" LARGER THAN THE OUTSIDE DIAMETER OF THE SYSTEM PIPE.



RISER DETAIL

Hillsboro Water	**SINGLE FAMILY RESIDENTIAL FIRE SPRINKLER CREDIT PROGRAM**	**SCALE: NONE** **DATE: AUG 2018**	**550-5**



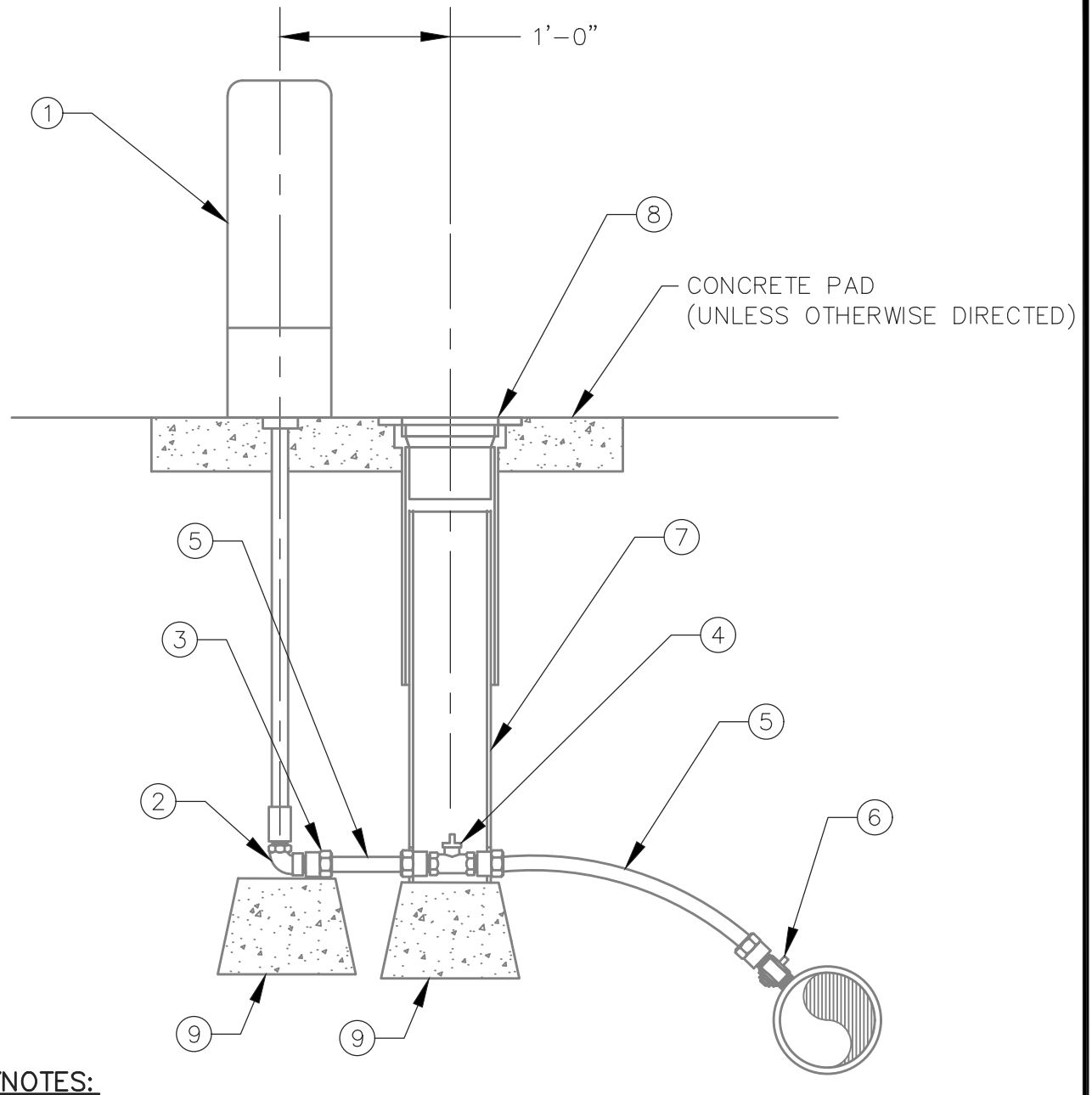
KEYNOTES:

1. EXISTING WATER MAIN, 8" MIN SIZE
2. SERVICE CONNECTION WET TAP BY CITY–APPROVED CONTRACTOR
3. GATE VALVE (TYPICAL)
4. DOMESTIC WATER SERVICE METER
5. DOMESTIC SERVICE BACKFLOW PREVENTION ASSEMBLY
6. IRRIGATION BACKFLOW PREVENTION ASSEMBLY
7. PUBLIC FIRE HYDRANT (IF REQUIRED)
8. FIRE SERVICE BACKFLOW PREVENTION ASSEMBLY
9. IRRIGATION METER (OPTIONAL AT ADDITIONAL SDC EXPENSE)
10. RIGHT–OF–WAY / PROPERTY LINE
11. PRIVATE HYDRANT OR FIRE DEPT CONNECTION (FDC) SHALL HAVE A 3' CLEAR ZONE AND THE HEIGHT SHALL BE FROM 1.5' TO 4' FROM FINISHED GRADE. REFER TO NOTE 3
12. FULL SIZE RESTRAINED VALVE ON FIRE SERVICE LINE AT EDGE OF RIGHT–OF–WAY

NOTES:

1. IRRIGATION SYSTEM CONNECTION OPTIONS:
   OPTION 1: CONNECT DOWNSTREAM OF THE DOMESTIC SERVICE BACKFLOW PREVENTION ASSEMBLY.
   OPTION 2: CONNECT TO SEPARATE IRRIGATION METER SERVICE (ADDITIONAL SDC EXPENSE REQUIRED).
2. DOMESTIC AND FIRE SERVICE LINES 4" AND LARGER SHALL BE DUCTILE IRON FOR A DISTANCE OF 5' MINIMUM DOWNSTREAM OF THE BACKFLOW VAULT.
3. PRIVATE FDC OR HYDRANT MUST BE LOCATED ON CUSTOMER SIDE OF BACKFLOW.
4. PIPING FOR FIRE SERVICE SHALL COMPLY WITH THE UNDERGROUND PIPING STANDARDS IN NFPA 24.

Hillsboro Water	TYPICAL COMMERCIAL / INDUSTRIAL SERVICE LAYOUT	SCALE: NONE DATE: AUG 2018	560-1

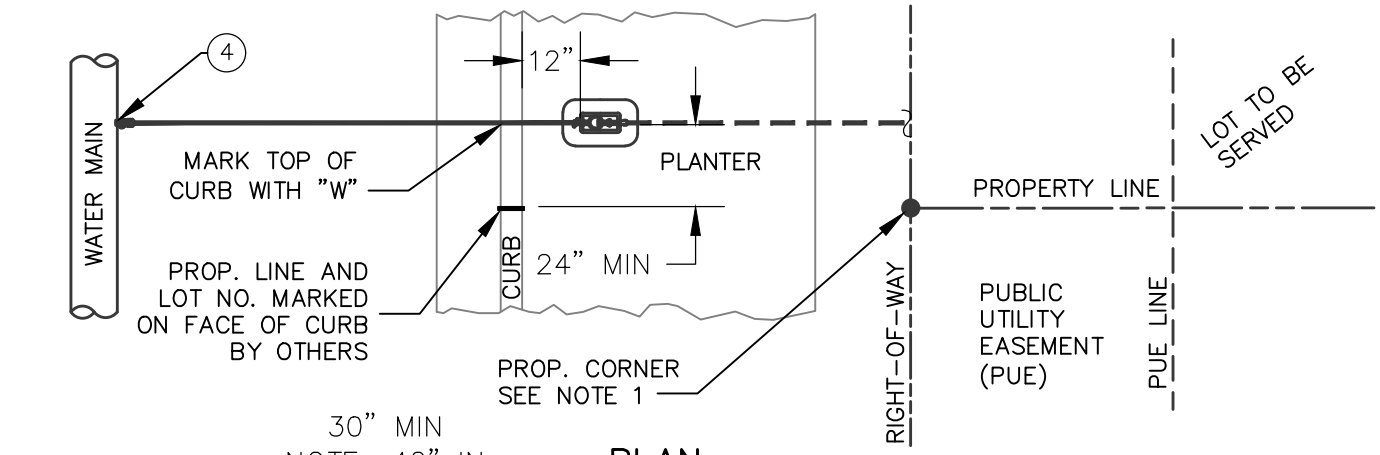


KEYNOTES:

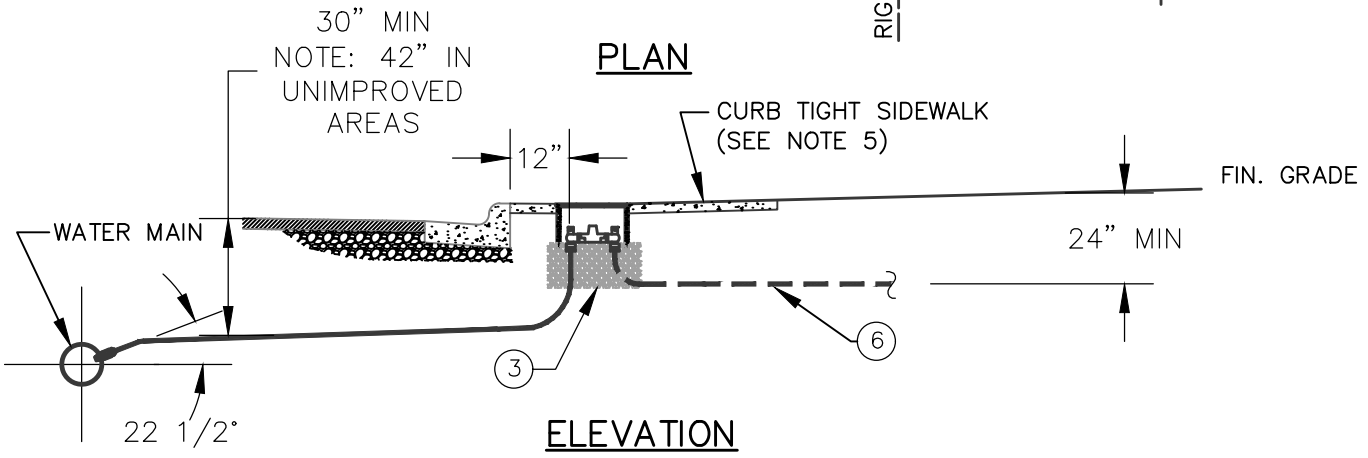
① SAMPLING STATION "ECLIPSE NO. 88SS" BY KUPFERLE FOUNDRY CO WITH FACTORY APPLIED "SAFTEY BLUE" PAINT AND CITY LOGO AND WITH OPTIONAL 1/4" BALL VALVE IN PLACE OF 1/4" PET COCK ON VENT PIPE
② 3/4" BRASS STREET ELL
③ 3/4" COUPLING MIPT x CTS
④ 3/4" CURB STOP CTS x CTS
⑤ 3/4" TYPE K SOFT COPPER TUBING
⑥ 3/4" CORP STOP CC x CTS
⑦ 6" SCH 40 OR D3034 PVC PIPE RISER, LENGTH AS NECESSARY. SLOT THE PVC PIPE BOTTOM TO REST ON CONCRETE BLOCK.
⑧ REFER TO VALVE BOX DETAIL 540-2.
⑨ 8"x8"x8" CONCRETE PIER BLOCK OR EQUIVALENT SUPPORT (E.G. 18"x12"x2" CONCRETE PAD).

Hillsboro Water	**SAMPLE STATION INSTALLATION**	**SCALE: NONE**	**560-2**
		DATE: SEPT 2017	

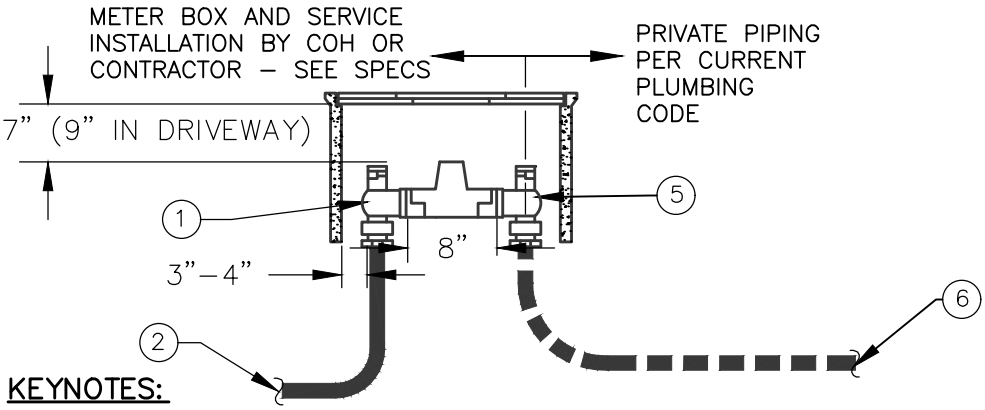
FILENAME: 560-2.DWG



PLAN



ELEVATION



KEYNOTES:

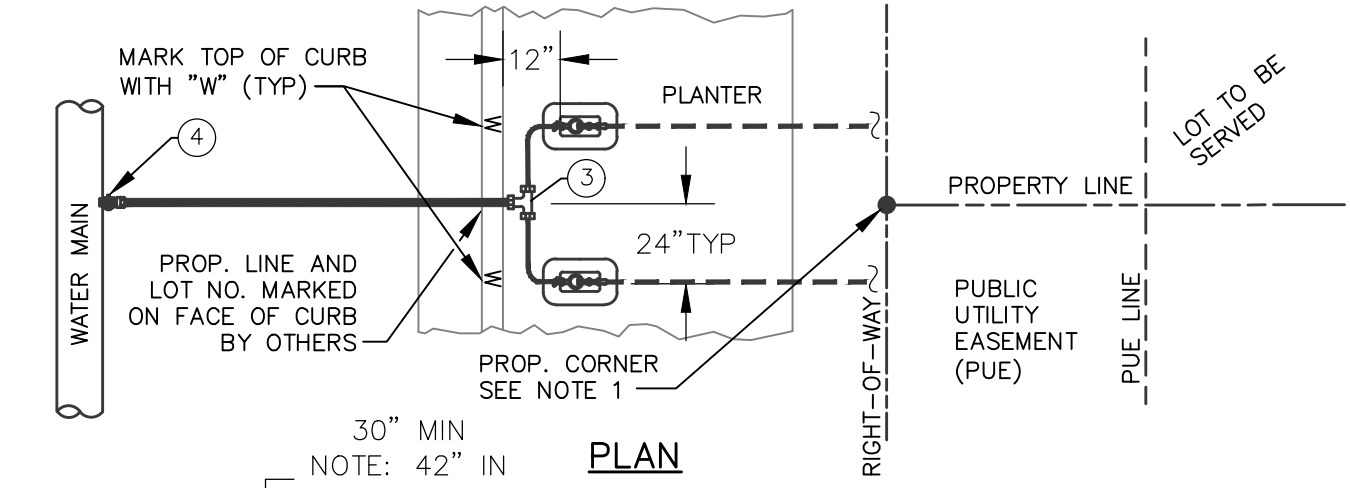
① 3/4" ANGLE METER STOP BALL VALVE WITH 1" CTS INLET
② 1" TYPE "K" SOFT COPPER TUBING
③ COMPACTED CLASS "B" BACKFILL MINIMUM 6" BASE
④ 1" CORP STOP AND TYPE "K" SOFT COPPER TUBING
⑤ 3/4" ANGLE METER STOP BALL VALVE WITH 1" FIPT OUTLET (CITY TO INSTALL WHEN METER IS PLACED)
⑥ TUBING SUPPLIED BY PLUMBING CONTRACTOR

NOTES:

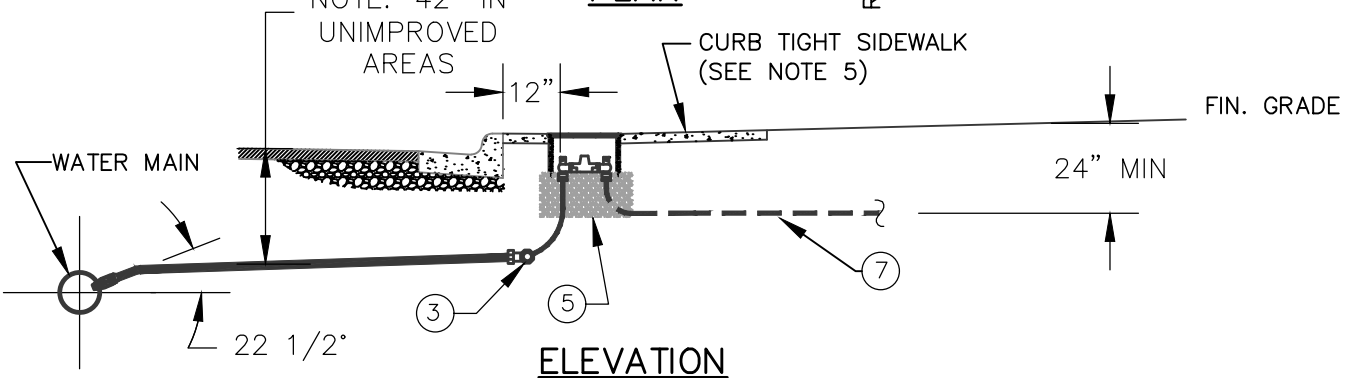
1. ORS 92.044(7) PROHIBITS LOCATING ANY UTILITY INFRASTRUCTURE WITHIN 1 FOOT OF A SURVEY MONUMENT. DEVELOPER SHALL PAY FOR ANY RELOCATION OF SERVICES AND/OR METER BOXES FOUND TO FALL WITHIN 1 FOOT OF A SURVEY MONUMENT LOCATION.
2. ALL FITTINGS SHALL BE BRASS OR COPPER.
3. WATER DEPARTMENT WILL INSTALL METER AFTER WATER MAIN HAS BEEN APPROVED FOR PUBLIC USE AND REQUIRED FEES HAVE BEEN PAID.
4. ALL SERVICE LINES SHALL BE INSTALLED PRIOR TO PRESSURE TESTING.
5. IF METER BOX IS IN A CURB TIGHT SIDEWALK, PLUMBING CONTRACTOR SHALL MAKE SERVICE CONNECTION PRIOR TO SIDEWALK POUR.

Hillsboro Water	5/8" x 3/4" SERVICE CONNECTION	SCALE: NONE DATE: JULY 2018	560-3

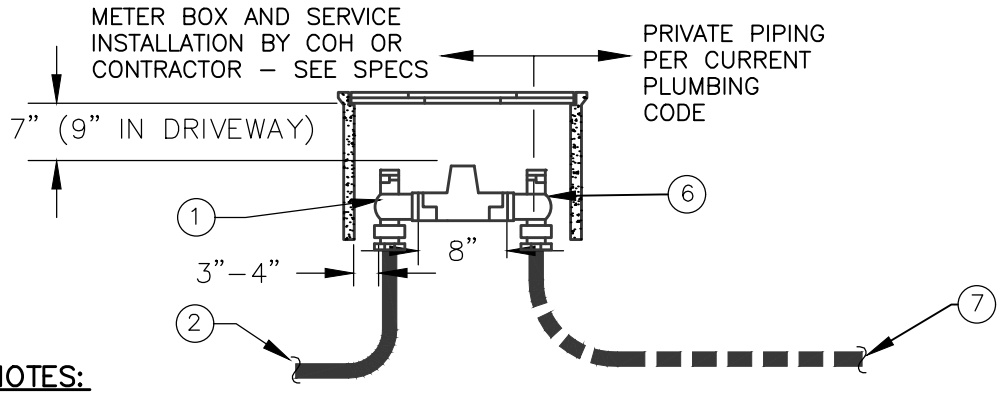
FILENAME: 560-3 DRAFT.DWG



PLAN



ELEVATION



KEYNOTES:

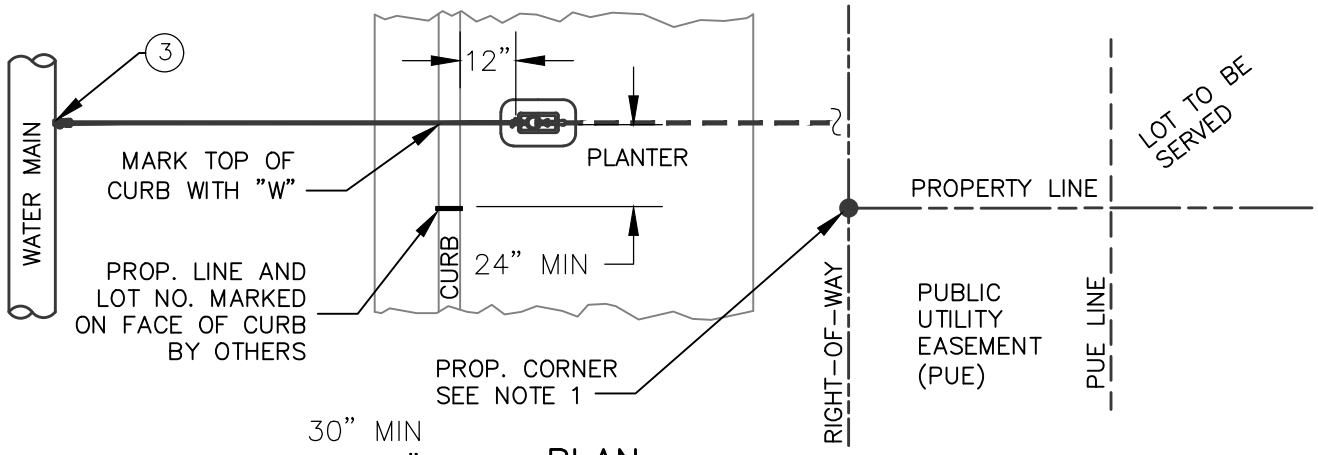
① 3/4" ANGLE METER STOP BALL VALVE WITH 1" CTS INLET
② 1" TYPE "K" SOFT COPPER TUBING
③ 1" x 1" x 1" CTS TEE
④ 1" CORP STOP CC x CTS
⑤ COMPACTED CLASS "B" BACKFILL MINIMUM 6" BASE
⑥ 3/4" ANGLE METER STOP BALL VALVE WITH 1" FIPT OUTLET (CITY TO INSTALL WHEN METER IS PLACED)
⑦ TUBING SUPPLIED BY PLUMBING CONTRACTOR

NOTES:

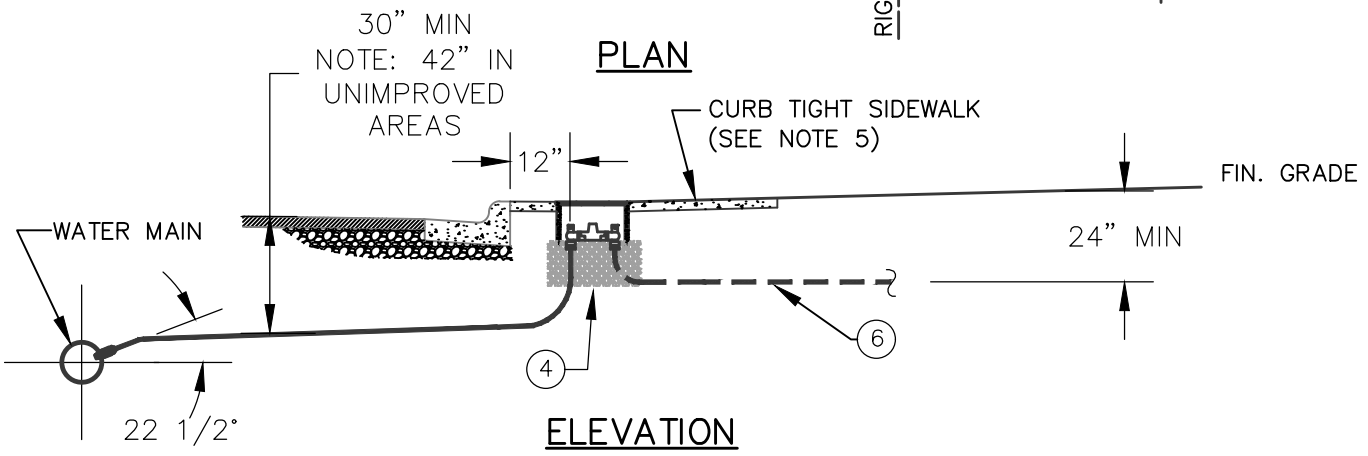
1. ORS 92.044(7) PROHIBITS LOCATING ANY UTILITY INFRASTRUCTURE WITHIN 1 FOOT OF A SURVEY MONUMENT. DEVELOPER SHALL PAY FOR ANY RELOCATION OF SERVICES AND/OR METER BOXES FOUND TO FALL WITHIN 1 FOOT OF A SURVEY MONUMENT LOCATION.
2. ALL FITTINGS SHALL BE BRASS OR COPPER.
3. WATER DEPARTMENT WILL INSTALL METER AFTER WATER MAIN HAS BEEN APPROVED FOR PUBLIC USE AND REQUIRED FEES HAVE BEEN PAID.
4. ALL SERVICE LINES SHALL BE INSTALLED PRIOR TO PRESSURE TESTING.
5. IF METER BOX IS IN A CURB TIGHT SIDEWALK, PLUMBING CONTRACTOR SHALL MAKE SERVICE CONNECTION PRIOR TO SIDEWALK POUR.

Hillsboro Water	3/4" x 5/8" DOUBLE SERVICE CONNECTION	SCALE: NONE DATE: JULY 2018	560-4

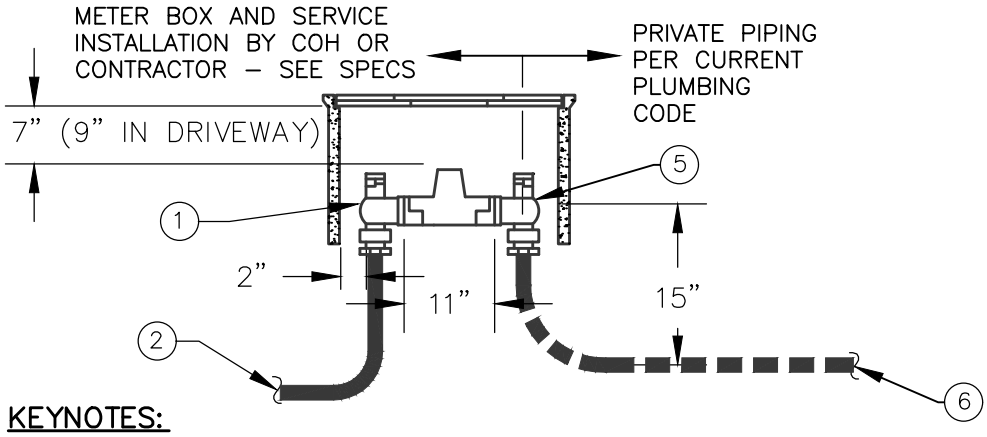
FILENAME: 560-4.DWG



PLAN



ELEVATION



KEYNOTES:

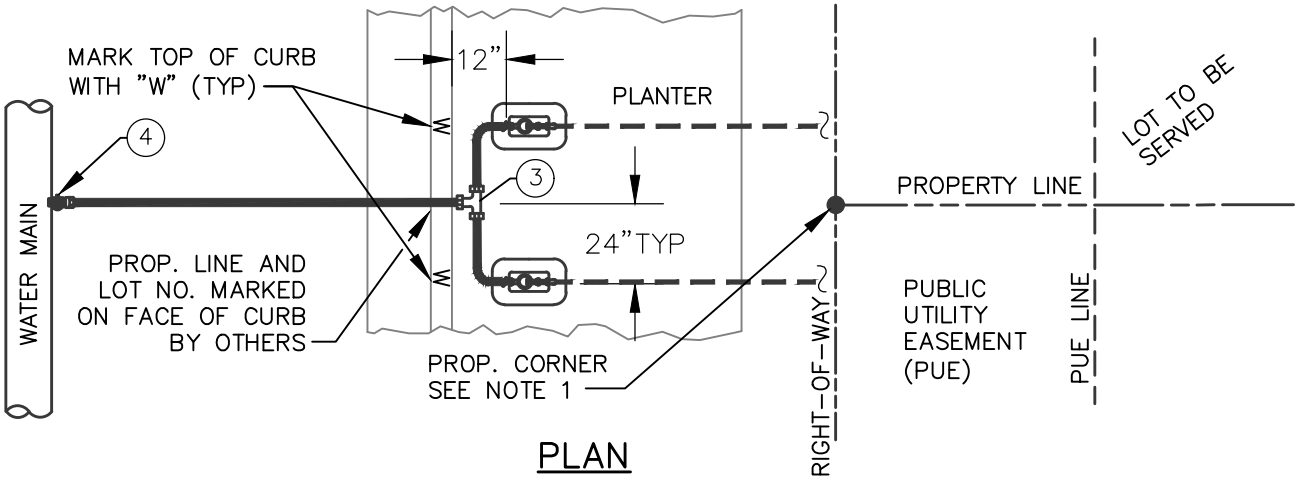
① 1" x 1" ANGLE METER STOP BALL VALVE WITH 1" CTS INLET
② 1" TYPE "K" SOFT COPPER TUBING
③ 1" CORP STOP CC x CTS
④ COMPACTED CLASS "B" BACKFILL MINIMUM 6" BASE
⑤ 1" ANGLE METER STOP BALL VALVE WITH 1" FIPT OUTLET (CITY TO INSTALL WHEN METER IS PLACED)
⑥ TUBING SUPPLIED BY PLUMBING CONTRACTOR

NOTES:

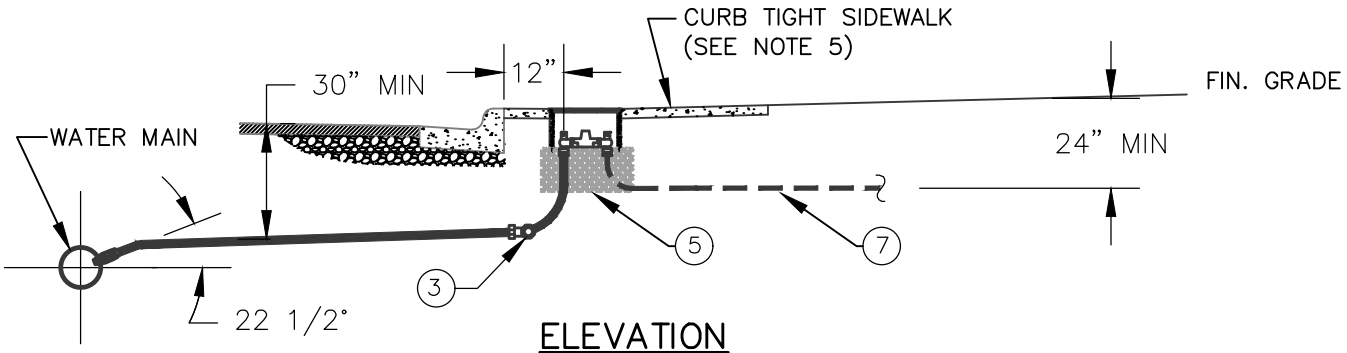
1. ORS 92.044(7) PROHIBITS LOCATING ANY UTILITY INFRASTRUCTURE WITHIN 1 FOOT OF A SURVEY MONUMENT. DEVELOPER SHALL PAY FOR ANY RELOCATION OF SERVICES AND/OR METER BOXES FOUND TO FALL WITHIN 1 FOOT OF A SURVEY MONUMENT LOCATION.
2. ALL FITTINGS SHALL BE BRASS OR COPPER.
3. WATER DEPARTMENT WILL INSTALL METER AFTER WATER MAIN HAS BEEN APPROVED FOR PUBLIC USE AND REQUIRED FEES HAVE BEEN PAID.
4. ALL SERVICE LINES SHALL BE INSTALLED PRIOR TO PRESSURE TESTING.
5. IF METER BOX IS IN A CURB TIGHT SIDEWALK, PLUMBING CONTRACTOR SHALL MAKE SERVICE CONNECTION PRIOR TO SIDEWALK POUR.

Hillsboro Water	1" SERVICE CONNECTION	SCALE: NONE DATE: JULY 2018	560-5

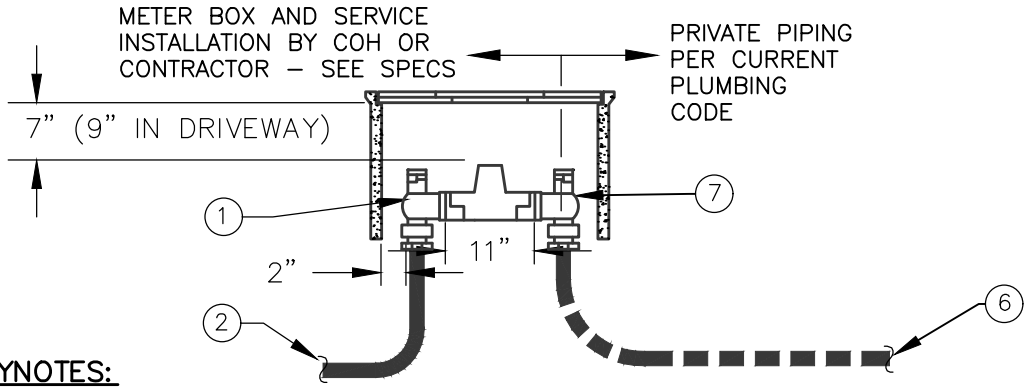
FILENAME: 560-5.DWG



PLAN



ELEVATION



KEYNOTES:

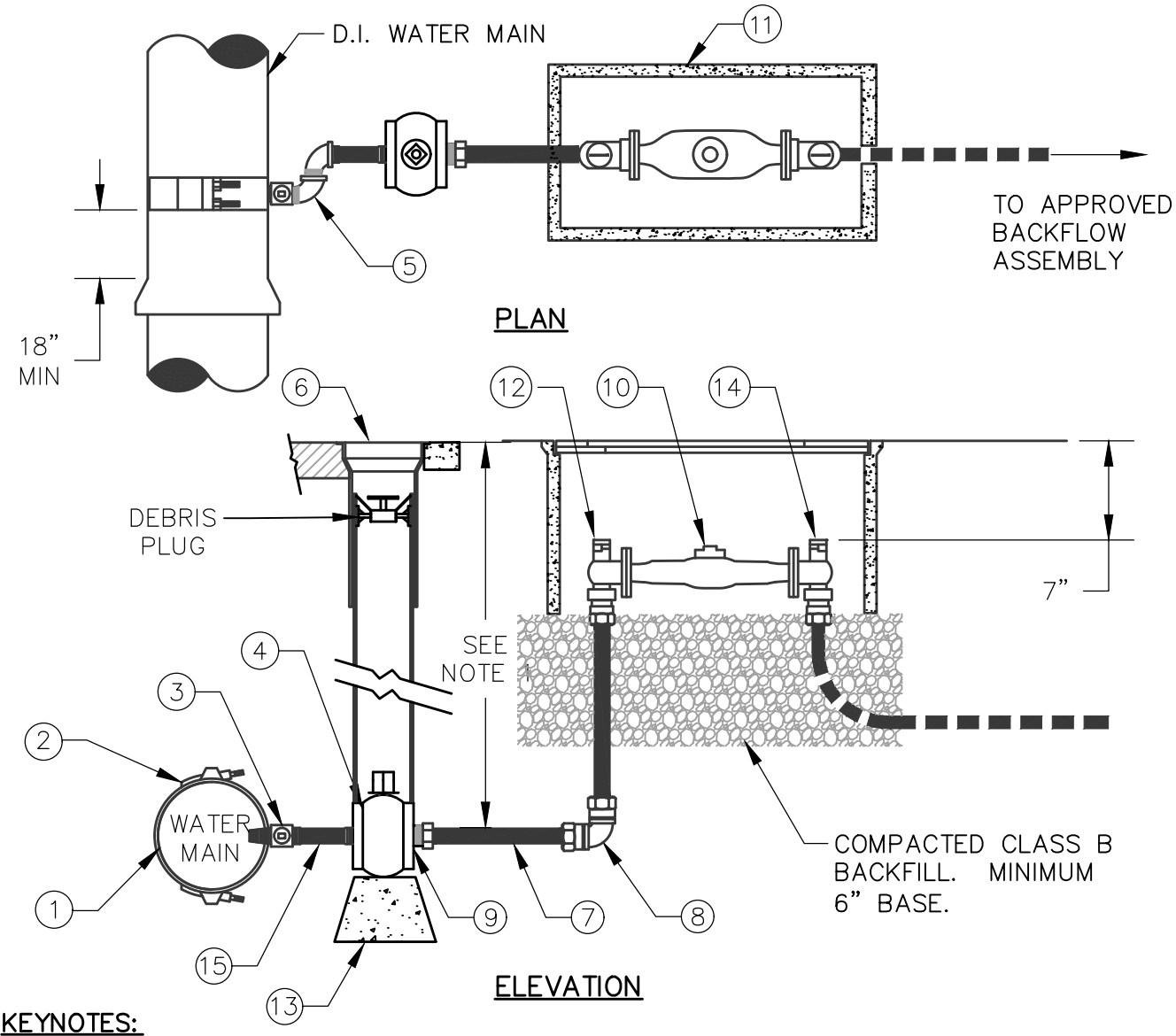
① 1" ANGLE METER STOP BALL VALVE WITH 1" CTS INLET
② 1" TYPE "K" SOFT COPPER TUBING
③ 1" x 1" x 1" CTS TEE
④ 1" CORP STOP CC x CTS
⑤ COMPACTED CLASS "B" BACKFILL MINIMUM 6" BASE
⑥ TUBING SUPPLIED BY PLUMBING CONTRACTOR
⑦ 1" ANGLED METER BALL VALVE WITH 1" FIPT OUTLET (CITY TO INSTALL WHEN METER PLACED)

NOTES:

1. ORS 92.044(7) PROHIBITS LOCATING ANY UTILITY INFRASTRUCTURE WITHIN 1 FOOT OF A SURVEY MONUMENT. DEVELOPER SHALL PAY FOR ANY RELOCATION OF SERVICES AND/OR METER BOXES FOUND TO FALL WITHIN 1 FOOT OF A SURVEY MONUMENT LOCATION.
2. ALL FITTINGS SHALL BE BRASS OR COPPER.
3. WATER DEPARTMENT WILL INSTALL METER AFTER WATER MAIN HAS BEEN APPROVED FOR PUBLIC USE AND REQUIRED FEES HAVE BEEN PAID.
4. ALL SERVICE LINES SHALL BE INSTALLED PRIOR TO PRESSURE TESTING.
5. IF METER BOX IS IN A CURB TIGHT SIDEWALK, PLUMBING CONTRACTOR SHALL MAKE SERVICE CONNECTION PRIOR TO SIDEWALK POUR.

Hillsboro Water	1" DOUBLE SERVICE CONNECTION	SCALE: NONE DATE: JULY 2018	560-6

FILENAME: 560-6.DWG



KEYNOTES:

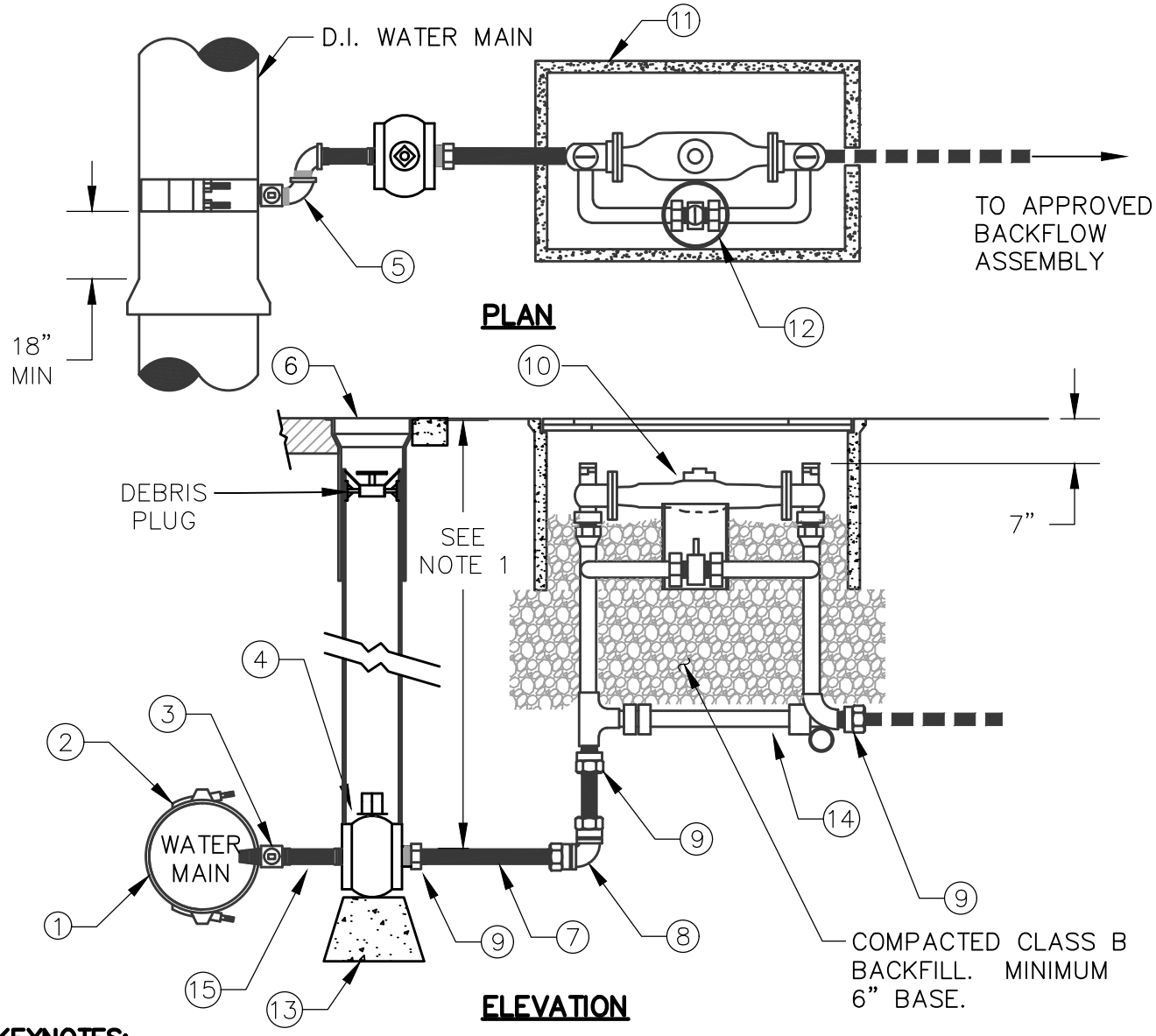
1. WATER MAIN
2. 2" TAPPING SADDLE W/2" CC THREAD OUTLET
3. 2" CORP STOP CC x FIPT
4. 2" GATE VALVE w/2" OPERATING NUT FIPT x FIPT
5. (2) 2" BRASS STREET ELLS
6. VALVE BOX PER 540-2
7. 2" TYPE K RIGID COPPER PIPE
8. 2" CTS x CTS 90° ELL
9. USE 2" CTS x MIPT COUPLING
10. 1-1/2" OR 2" WATER METER WITH AUTOMATED METER READER (AMR)
11. WATER METER BOX 17" x 30" x 24" DEEP
12. 2" FLANGED ANGLE METER BALL VALVE W/2" CTS INLET
13. 8"x8"x8" CONC. PIER BLOCK OR EQUIVALENT SUPPORT ON UNDISTURBED EARTH
14. 2" FLANGED ANGLE METER BALL VALVE W/2" FIPT OUTLET (CITY TO INSTALL WHEN METER IS PLACED)
15. 2" x 12" BRASS NIPPLE

NOTES:

1. SERVICE LINES BETWEEN THE WATER MAIN AND THE METER SHALL HAVE 30" OF COVER FOR IMPROVED AREAS AND 42" OF COVER FOR UNIMPROVED AREAS.
2. ALL FITTINGS SHOWN SHALL BE BRASS OR COPPER.
3. WATER DEPARTMENT WILL INSTALL METER AFTER WATER MAIN HAS BEEN APPROVED FOR PUBLIC USE, REQUIRED FEES HAVE BEEN PAID, AND ALL BACKFLOW PREVENTION REQUIREMENTS HAVE BEEN MET.
4. ALL SERVICE LINES SHALL BE INSTALLED PRIOR TO PRESSURE TESTING.

Hillsboro Water	**1-1/2" and 2" IRRIGATION SERVICE CONNECTION**	**SCALE: NONE**	**560-7**
		DATE: JULY 2018	

FILENAME: 560-7 DRAFT.DWG



KEYNOTES:

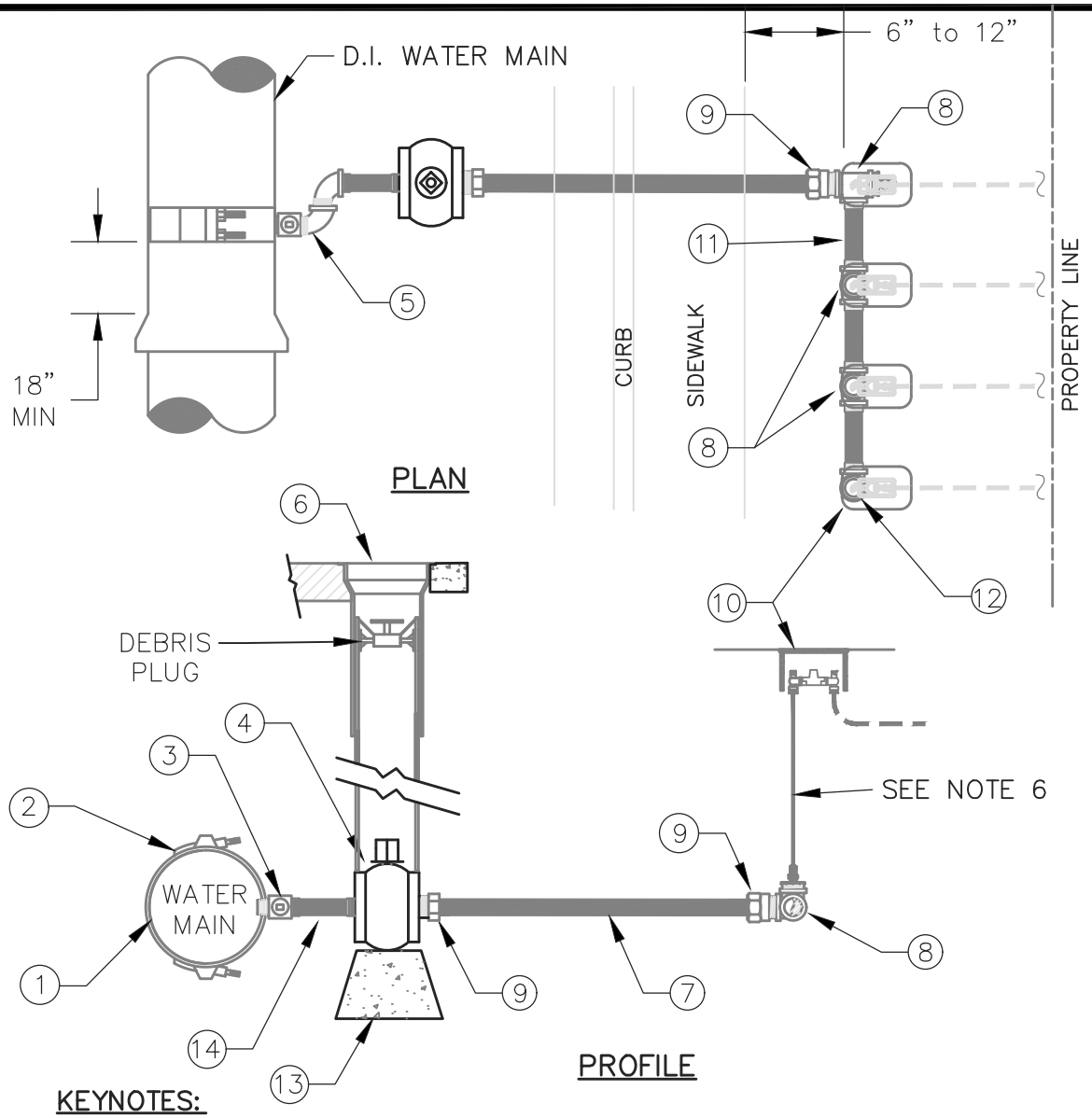
1. WATER MAIN
2. 2" TAPPING SADDLE W/2" THREAD OUTLET
3. 2" CORP STOP CC x MIPT
4. 2" GATE VALVE w/2" OPERATING NUT FIPT x FIPT
5. (2) 2" BRASS STREET ELLS
6. VALVE BOX PER 540-2
7. 2" TYPE K RIGID COPPER PIPE
8. 2" CTS x CTS 90° ELL
9. USE 2" CTS x MIPT COUPLING
10. 1 1/2" OR 2" WATER METER WITH AUTOMATED METER READER (AMR)
11. WATER METER BOX 17" x 30" x 24" DEEP
12. 2" OR 4" PVC PIPE, LENGTH AS REQUIRED
13. 8"x8"x8" CONC. PIER BLOCK OR EQUIVALENT SUPPORT ON UNDISTURBED EARTH
14. 2" COPPER METER SETTER W/HIGH BYPASS
15. 2" x 12" BRASS NIPPLE

NOTES:

1. SERVICE LINES BETWEEN THE WATER MAIN AND THE METER SHALL HAVE 30" OF COVER FOR IMPROVED AREAS AND 42" OF COVER FOR UNIMPROVED AREAS.
2. ALL FITTINGS SHOWN SHALL BE BRASS OR COPPER.
3. WATER DEPARTMENT WILL INSTALL METER AFTER WATER MAIN HAS BEEN APPROVED FOR PUBLIC USE, REQUIRED FEES HAVE BEEN PAID, AND ALL BACKFLOW PREVENTION REQUIREMENTS HAVE BEEN MET.
4. ALL SERVICE LINES SHALL BE INSTALLED PRIOR TO PRESSURE TESTING.

Hillsboro Water	1-1/2" and 2" SERVICE CONNECTION	SCALE: NONE DATE: JULY 2018	560-8

FILENAME: 560-9 DRAFT.DWG



KEYNOTES:

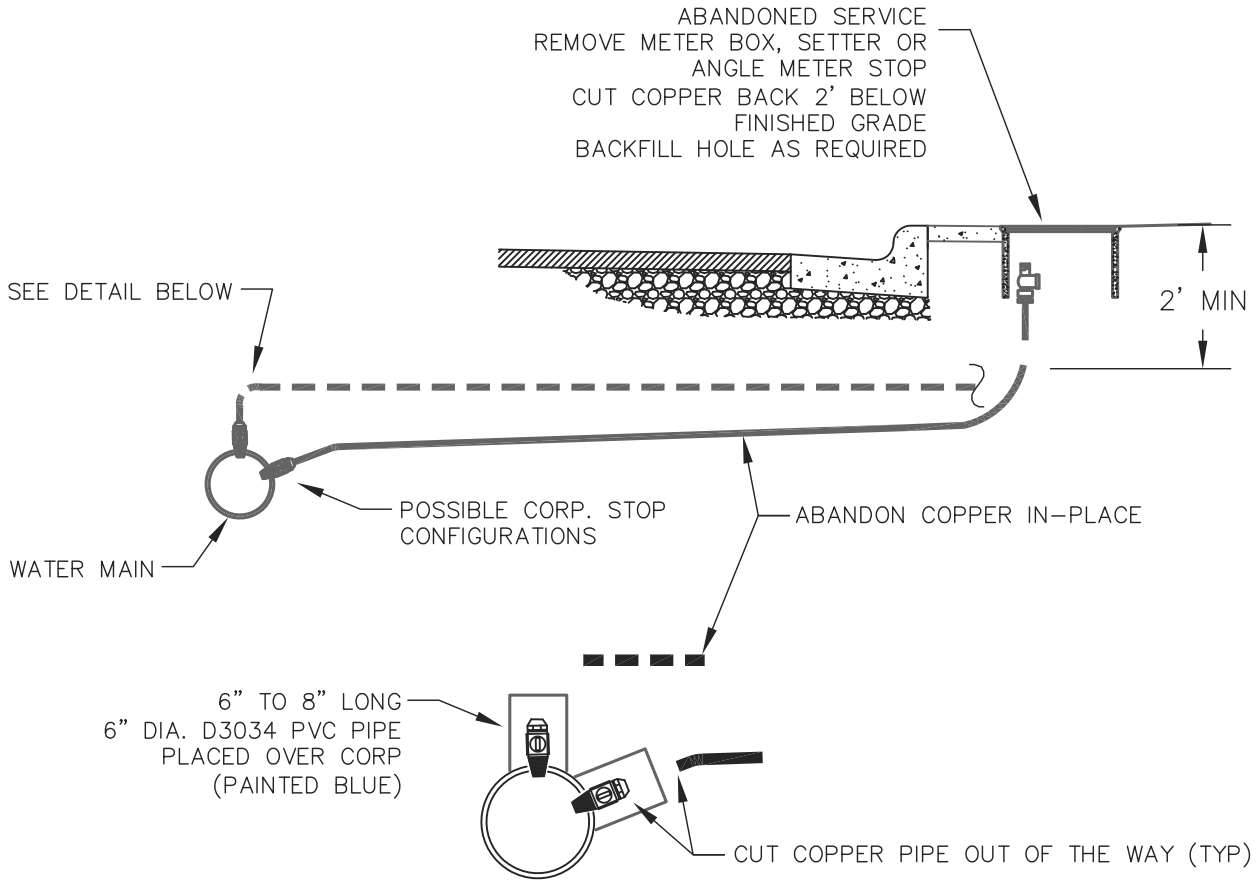
1. WATER MAIN
2. 2" TAPPING SADDLE W/2" THREAD OUTLET
3. 2" CORP STOP CC x MIPT
4. 2" GATE VALVE w/2" OPERATING NUT FIPT x FIPT
5. (2) 2" BRASS STREET ELLS
6. VALVE BOX PER 540-2
7. 2" TYPE K RIGID COPPER PIPE
8. 2" BRASS TEE W/2" x 1" BRASS BUSHING W/1" MIPT x CTS COUPLING
9. 2" CTS x MIPT COUPLING
10. WATER METER BOX 17" x 30" x 18" DEEP
11. 2" x 12" BRASS NIPPLE
12. 2" BRASS 90° ELL W" x 1" BRASS BUSHING W/1" MIPT x CTS COUPLING
13. 8"X8"X8" CONCRETE PIER BLOCK OR EQUIVALENT SUPPORT ON UNDISTURBED EARTH
14. 2" x 12" BRASS NIPPLE

NOTES:

1. SERVICE LINES BETWEEN THE WATER MAIN AND THE METER SHALL HAVE 30" OF COVER FOR IMPROVED AREAS AND 42" OF COVER FOR UNIMPROVED AREAS.
2. ALL FITTINGS SHOWN SHALL BE BRASS OR COPPER.
3. WATER DEPARTMENT WILL INSTALL METER AFTER WATER MAIN HAS BEEN APPROVED FOR PUBLIC USE, REQUIRED FEES HAVE BEEN PAID, AND ALL BACKFLOW PREVENTION REQUIREMENTS HAVE BEEN MET.
4. ALL SERVICE LINES SHALL BE INSTALLED PRIOR TO PRESSURE TESTING.
5. MAXIMUM OF 4 SERVICES.
6. SEE APPLICABLE DETAIL DRAWING 560-3 OR 560-5 FOR SERVICE DESIGN.

Hillsboro Water	EXAMPLE FOR SERVICE MANIFOLD ASSEMBLY	SCALE: NONE DATE: SEPT 2017	560-9

FILENAME: 560-9 DRAFT.DWG

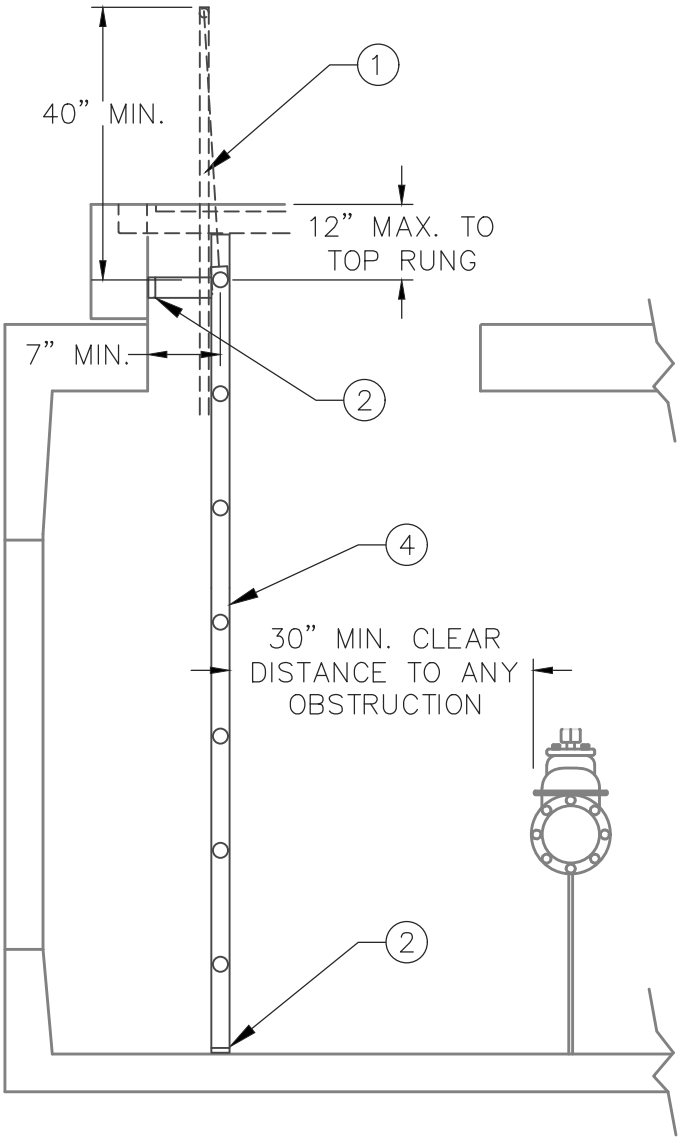


DETAIL

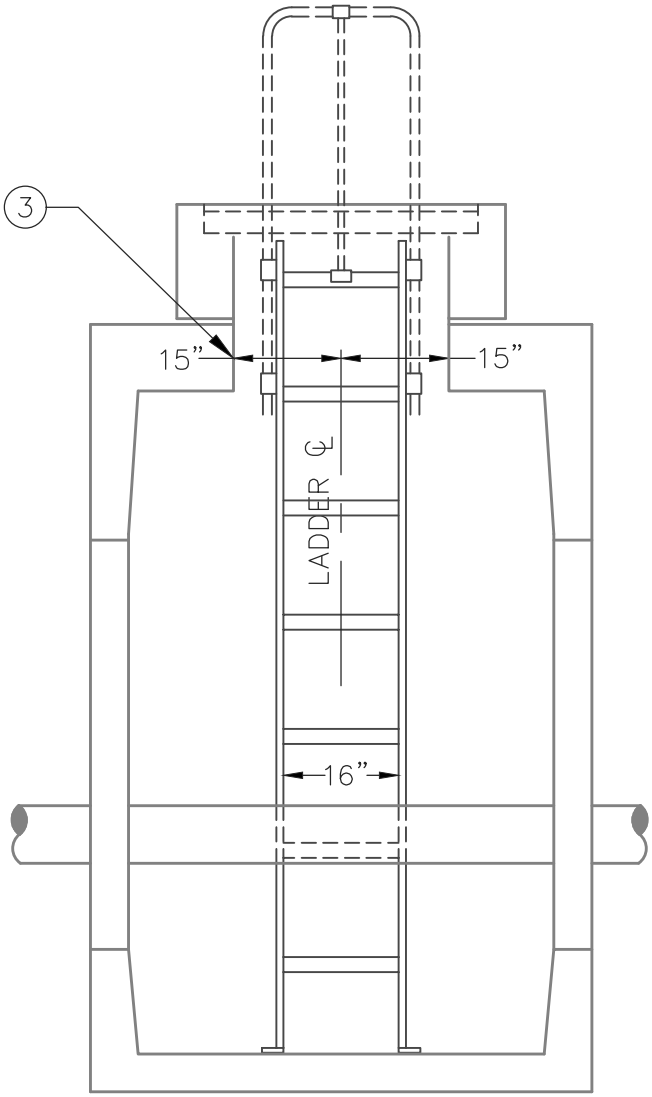
NOTE:

1. EXCAVATE A HOLE LARGE ENOUGH TO ACCESS CORP.
2. TURN CORP OFF.
3. SEVER COPPER AWAY FROM CORP. TO FACILITATE PVC PIPE PLACEMENT.
4. PLACE DUCK TAPE OVER CORP. OPENING.
5. PLACE PVC PIPE OVER CORP. & BACK FILL WITH 3/4 MINUS GRANULAR ROCK, FULL TRENCH DEPTH.
6. ABANDONMENT TO BE DONE WITH THE WATER DEPT. INSPECTOR PRESENT.

Hillsboro Water	SERVICE ABANDONMENT	SCALE: NONE DATE: SEPT 2017	560-10



SIDE VIEW



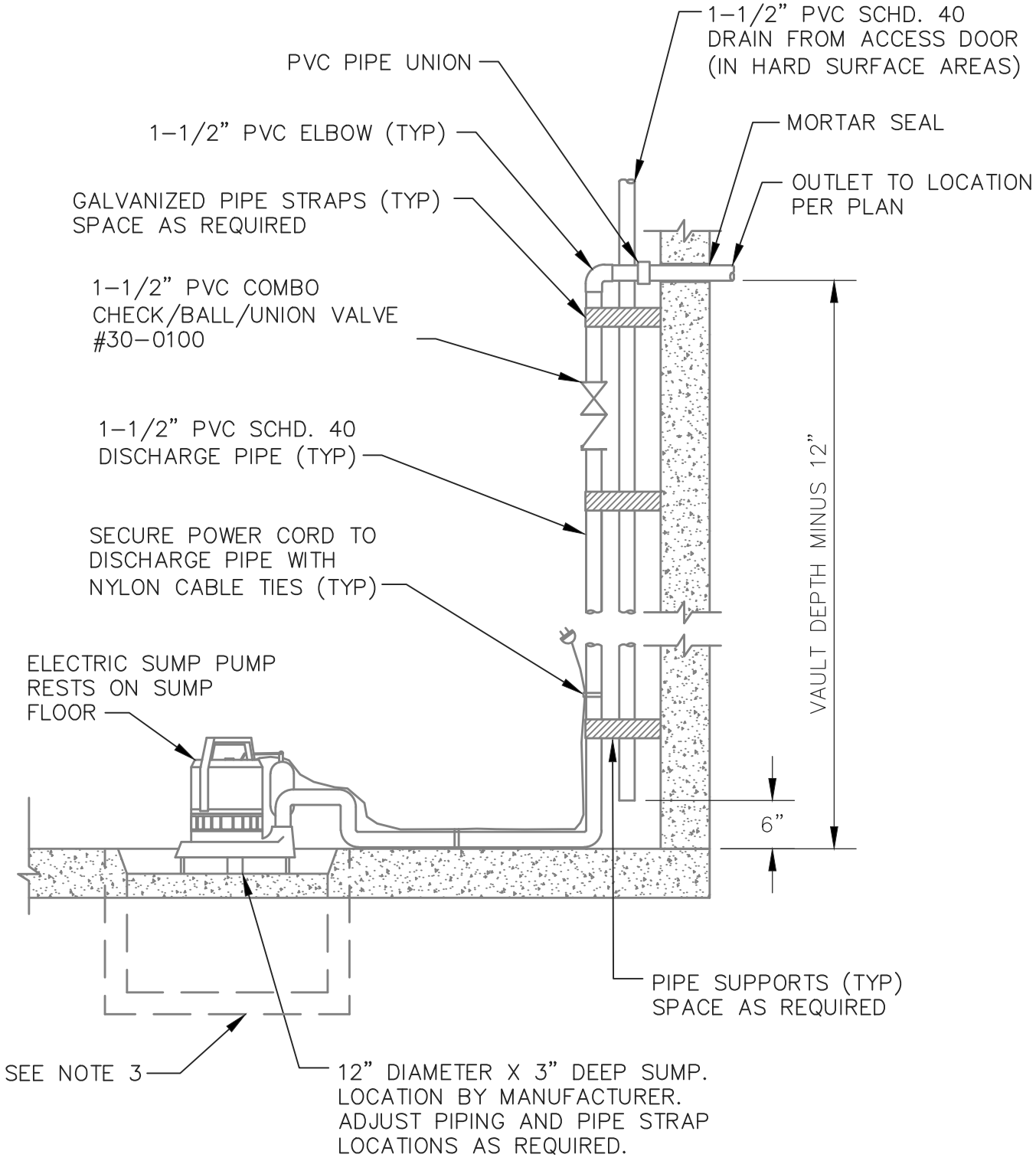
FRONT VIEW

KEYNOTES:

1. LADDER EXTENSION SHALL BE ALUMINUM AND EXTEND 40" ABOVE THE TOP RUNG OF THE LADDER. EXTENSION SHALL BE BOLTED UP BEHIND LADDER RUNGS.
2. ATTACH LADDER SUPPORT TO INSIDE FACE OF VAULT OPENING AND FLOOR OF VAULT WITH STAINLESS STEEL HARDWARE AS SHOWN. ℄ OF RUNG MUST BE SET 7" FROM FACE OF SURFACE BEHIND RUNG.
3. PROVIDE 15" MINIMUM LATERAL CLEARANCE ON EACH SIDE OF LADDER ℄.
4. LADDER SHALL MEET THE REQUIREMENTS OF OSHA AND SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.

Hillsboro Water	VAULT LADDER INSTALLATION	SCALE: NONE DATE: SEPT 2017	570-1

FILENAME: 570-1.DWG



NOTES:

1. SUMP PUMP – EBARA EPPD–3AS1, HONDA WSP33K1AA, OR APPROVED EQUAL
2. MOUNT GFI RECEPTACLE 6" BELOW CEILING OF VAULT UNLESS LOCATED OTHERWISE BY NATIONAL AND/OR LOCAL ELECTRIC CODES.
3. AN ALTERNATE SUMP PUMP MAY BE REQUIRED FOR INSTALLATIONS IN SPECIALTY VAULTS. CONTACT THE WATER DEPARTMENT FOR ALTERNATE SUMP PUMP DETAIL DRAWING.

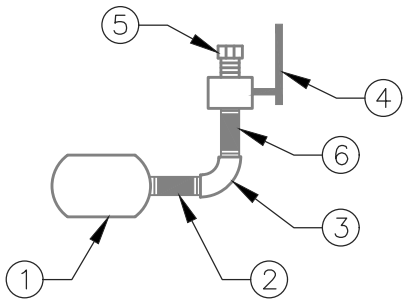
Hillsboro Water	**SUMP PUMP INSTALLATION**	**SCALE: NONE**	**570-2**
		DATE: SEPT 2017	

FILENAME: 570–2.DWG

SPECIFICATIONS

METER SIZE (IN)	3" METER
INCOMING LINE SIZE	4"
BY-PASS LINE SIZE	2" (INTERNAL)
OLDCASTLE VAULT NO. (OR APPROVED EQUAL)	687-WA (53" I.D.)*
DOOR NO. (OR APPROVED EQUAL) SEE NOTE 10	BILCO: JD-3AL SYRACUSE: CHD-11AL EAST JORDAN: H48721707
METER SPEC.	NEPTUNE TRU-FLO COMPOUND METER W/ R900i E-CODER

TEST PORT DETAIL



KEYNOTES:

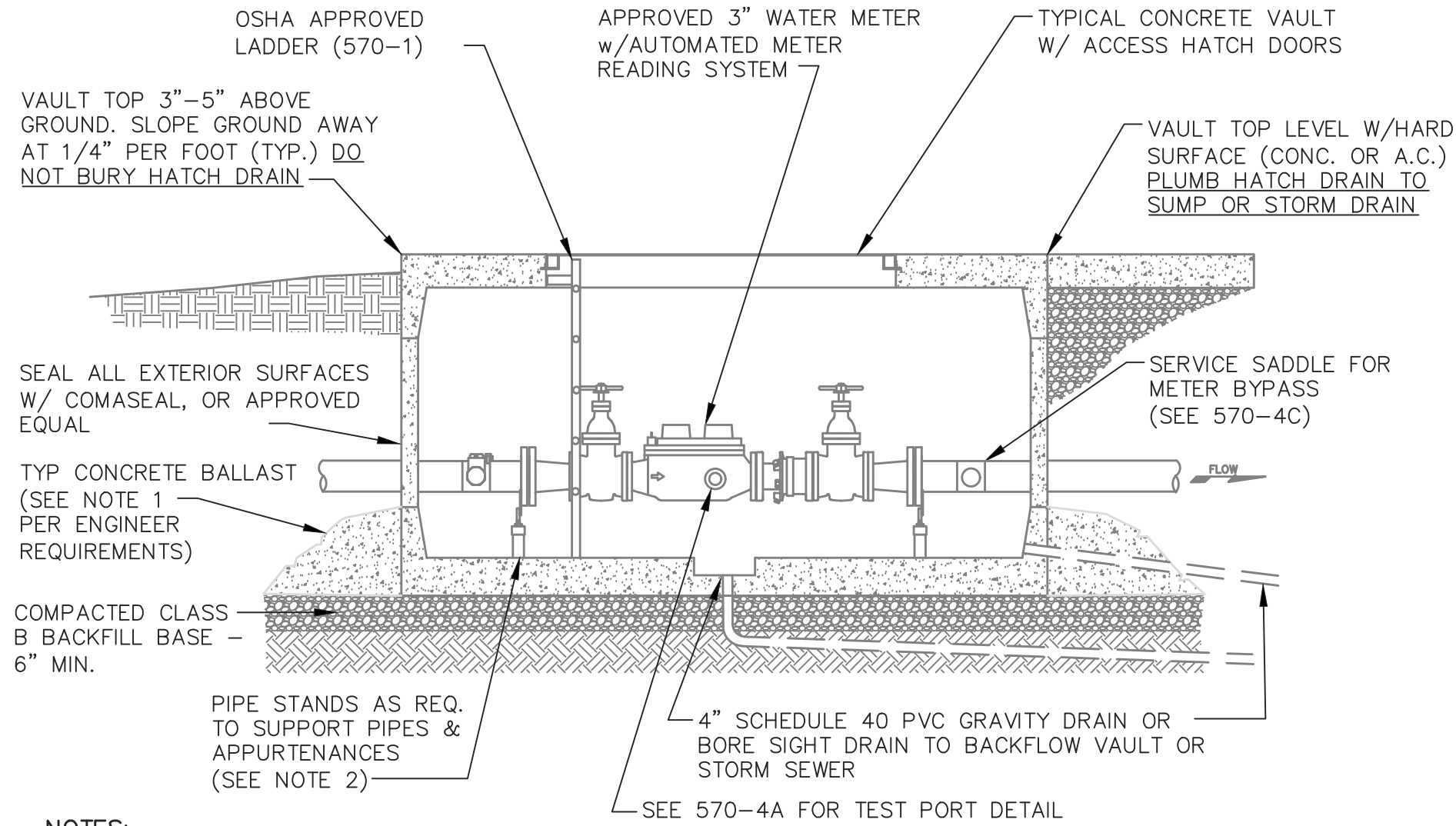
1. METER BODY
2. 1-1/2" X 3" BRASS NIPPLE
3. 1-1/2" BRASS ELL
4. 1-1/2" 300 PSI BRASS BALL VALVE
5. 1-1/2" BRASS PLUG
6. 1-1/2" x 6" BRASS NIPPLE

NOTES:

1. TOP OF VAULT SHALL BE A MINIMUM OF 3"-5" ABOVE FINISH GRADE.
2. CONCRETE BALLAST (3 CUBIC YARDS MINIMUM) IS A MINIMUM FIGURE ONLY - ENGINEER IS RESPONSIBLE TO ENSURE THAT ADEQUATE BALLAST IS PROVIDED TO PREVENT FLOATING OF VAULT.
3. INSTALL 4" DRAIN FROM BOTTOM OF VAULT FLOOR TO DAYLIGHT, TO AN APPROVED STORM SEWER SYSTEM OR PIPED OVER TO THE ACCOMPANYING BACKFLOW VAULT SUMP PUMP DISCHARGE.
4. ALL VAULT WALL OPENINGS SHALL BE CORE DRILLED AND SEALED WITH NON-SHRINK GROUT.
5. SERVICE LINES SHALL BE MECHANICALLY RESTRAINED FROM MAINLINE THROUGH VAULT TO BACKFLOW ASSEMBLY.
6. ALL PIPING AND FITTINGS THROUGH VAULT SHALL BE LEVEL, 18" MINIMUM AND 42" MAXIMUM ABOVE THE FLOOR OF VAULT.
7. BURIED PIPING SHALL BE BACKFILLED AS DESCRIBED AND SHOWN IN 520-1.
8. VAULT SHALL BE EQUIPPED WITH OSHA-APPROVED ALUMINUM EXTENSION LADDER. SEE 570-1.
9. SEE 570-4B ELEVATION VIEW AND 570-4C PLAN VIEW FOR ADDITIONAL REQUIREMENTS.
10. HATCH DOOR DRAIN CHANNEL SHALL BE PLUMBED TO AN APPROVED STORM SEWER OR TO THE VAULT SUMP WHEN INSTALLED FLUSH WITH FINISHED GRADE.
11. *REDUCED INTERIOR DEPTH (I.D.)

Hillsboro Water	3" WATER METER VAULT (DETAIL NOTES)	SCALE: NONE DATE: SEPT 2017	570-3A

FILENAME: 570-3A.DWG

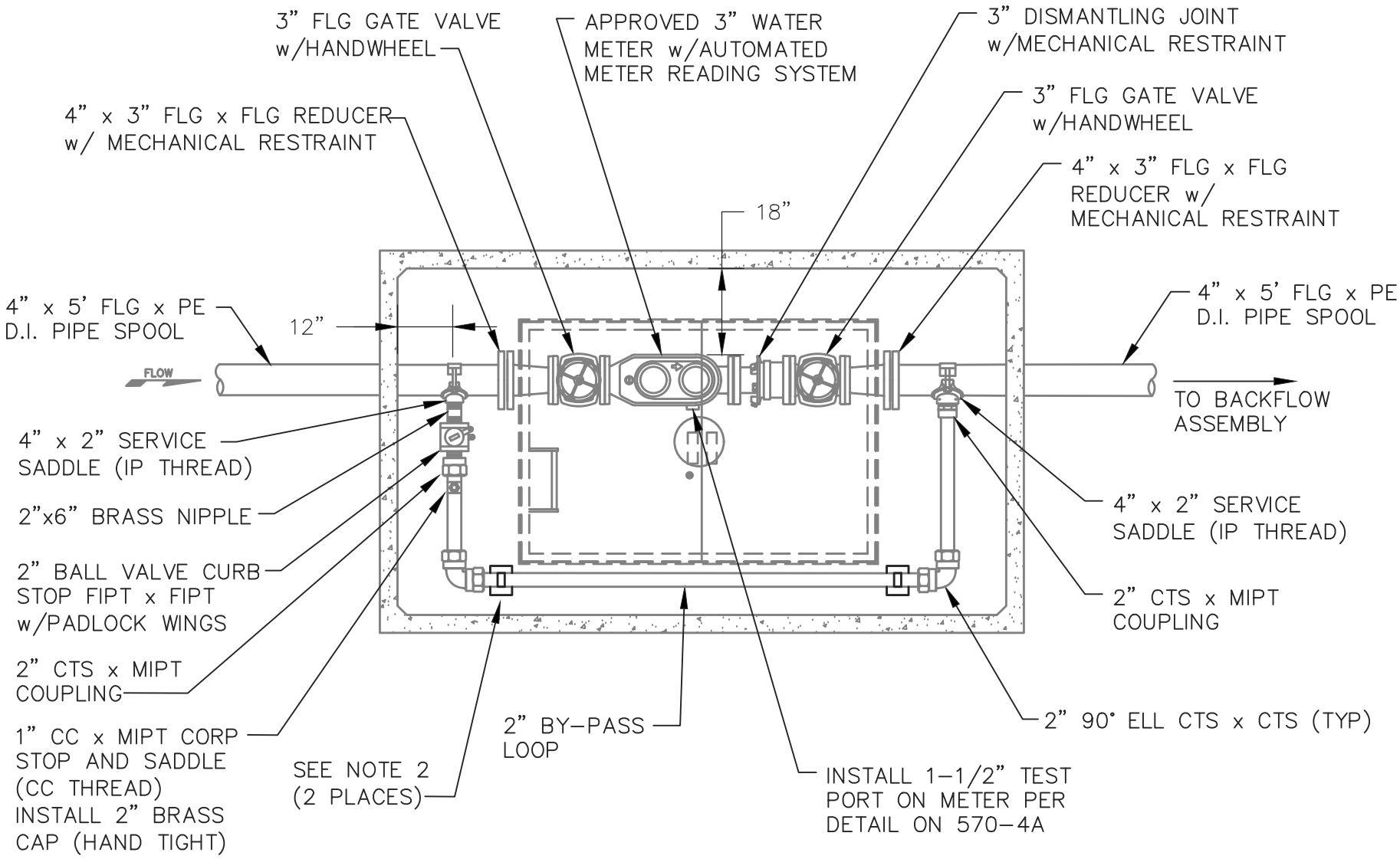


NOTES:

1. SEE 570-4A DETAIL NOTES AND 570-4C PLAN VIEW FOR ADDITIONAL REQUIREMENTS.
2. PIPE SUPPORTS FOR 2" BYPASS NOT SHOWN.

Hillsboro Water	**3" WATER METER VAULT (PROFILE)**	**SCALE: NONE**	**570-3B**
		DATE: SEPT 2017	

FILENAME: 570-3B DRAFT.DWG



NOTES:

1. SEE 570-4A DETAIL NOTES AND 570-4B ELEVATION VIEW FOR ADDITIONAL REQUIREMENTS.
2. TYPICAL PIPE SUPPORTS – STANDON MODEL S92.

Hillsboro Water	**3" WATER METER VAULT (PLAN)**	**SCALE: NONE**	**570-3C**
		DATE: SEPT 2017	

FILENAME: 570-3C.DWG

SPECIFICATIONS

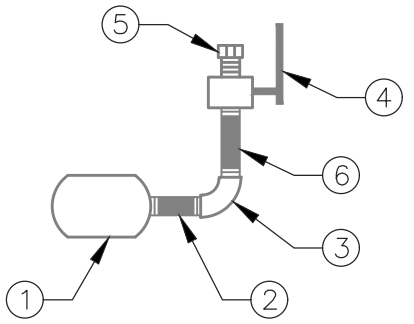
METER SIZE (IN)	4" METER	6" METER	8" METER	10" METER
INCOMING LINE SIZE	4"	6"	8"	10"
BY-PASS LINE SIZE**	4"	6"	8"	10"
OLDCASTLE VAULT NO. (OR APPROVED EQUAL)	687-WA (53" I.D.)*	687-WA (53" I.D.)*	810-WA (63" I.D.)*	810-WA (63" I.D.)*
HATCH NO. (OR APPROVED EQUAL) SEE NOTE 10	BILCO: JD-3AL SYRACUSE: CHD-11AL EAST JORDAN: H48721707	BILCO: JD-3AL SYRACUSE: CHD-11AL EAST JORDAN: H48721707	BILCO: JD-3AL SYRACUSE: CHD-11AL EAST JORDAN: H48721707	BILCO: JD-3AL SYRACUSE: CHD-11AL EAST JORDAN: H48721707
METER SPEC.	NEPTUNE TRU-FLO COMPOUND METER W/ R900i E-CODER	NEPTUNE TRU-FLO COMPOUND METER W/ R900i E-CODER	MFR: NEPTUNE. CONTACT WATER DEPT FOR REQUIREMENTS	MFR: NEPTUNE. CONTACT WATER DEPT FOR REQUIREMENTS

NOTES:

1. TOP OF VAULT SHALL BE A MINIMUM OF 3"–5" ABOVE FINISH GRADE.
2. CONCRETE BALLAST (3 CUBIC YARDS MINIMUM) IS A MINIMUM FIGURE ONLY – ENGINEER IS RESPONSIBLE TO ENSURE THAT ADEQUATE BALLAST IS PROVIDED TO PREVENT FLOATING OF VAULT.
3. INSTALL 4" DRAIN FROM BOTTOM OF VAULT FLOOR TO DAYLIGHT, TO AN APPROVED STORM SEWER SYSTEM OR PIPED OVER TO THE ACCOMPANYING BACKFLOW VAULT SUMP FOR SUMP PUMP DISCHARGE.
4. ALL VAULT WALL OPENINGS SHALL BE CORE DRILLED AND SEALED WITH NON–SHRINK GROUT.
5. SERVICE LINES SHALL BE MECHANICALLY RESTRAINED FROM MAINLINE THROUGH BACKFLOW ASSEMBLY.
6. ALL PIPING AND FITTINGS THROUGH VAULT SHALL BE LEVEL, A MINIMUM OF 18" AND A MAXIMUM OF 42" ABOVE THE FLOOR OF VAULT.
7. BURIED PIPING SHALL BE BACKFILLED AS DESCRIBED AND SHOWN IN 520–1.
8. VAULT SHALL BE EQUIPPED WITH OSHA–APPROVED ALUMINUM EXTENSION LADDER. SEE WTR–300.
9. SEE 570–5B ELEVATION VIEW AND 570–5C PLAN VIEW FOR ADDITIONAL REQUIREMENTS.
10. VAULT HATCH MODELS LISTED ARE FOR INSTALLATION IN NON–TRAFFIC AREAS ONLY.
11. *REDUCED INTERIOR DEPTH (I.D.)

** SMALLER BY-PASS LINE SIZE MAY BE APPROVED UPON REQUEST TO WATER DEPARTMENT.

TEST PORT DETAIL



KEYNOTES:

1. METER BODY
2. 2" x 3" BRASS NIPPLE
3. 2" BRASS ELL
4. 2" 300 PSI BRASS BALL VALVE
5. 2" BRASS PLUG
6. 2" x 6" BRASS NIPPLE

Hillsboro Water

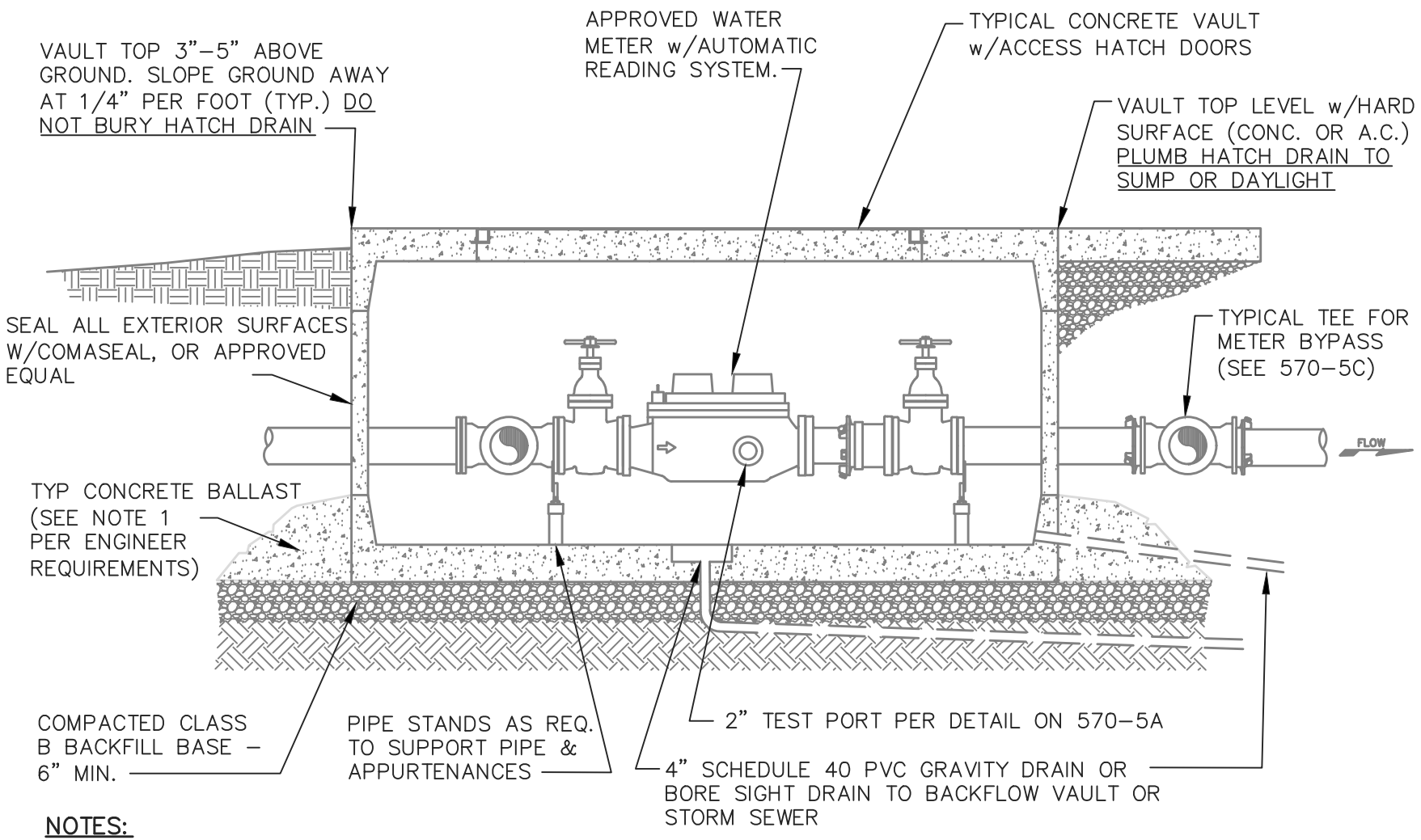
4" AND LARGER WATER METER VAULT (DETAIL NOTES)

SCALE: NONE

DATE: SEPT 2017

570-4A

FILENAME: 570–4A.DWG

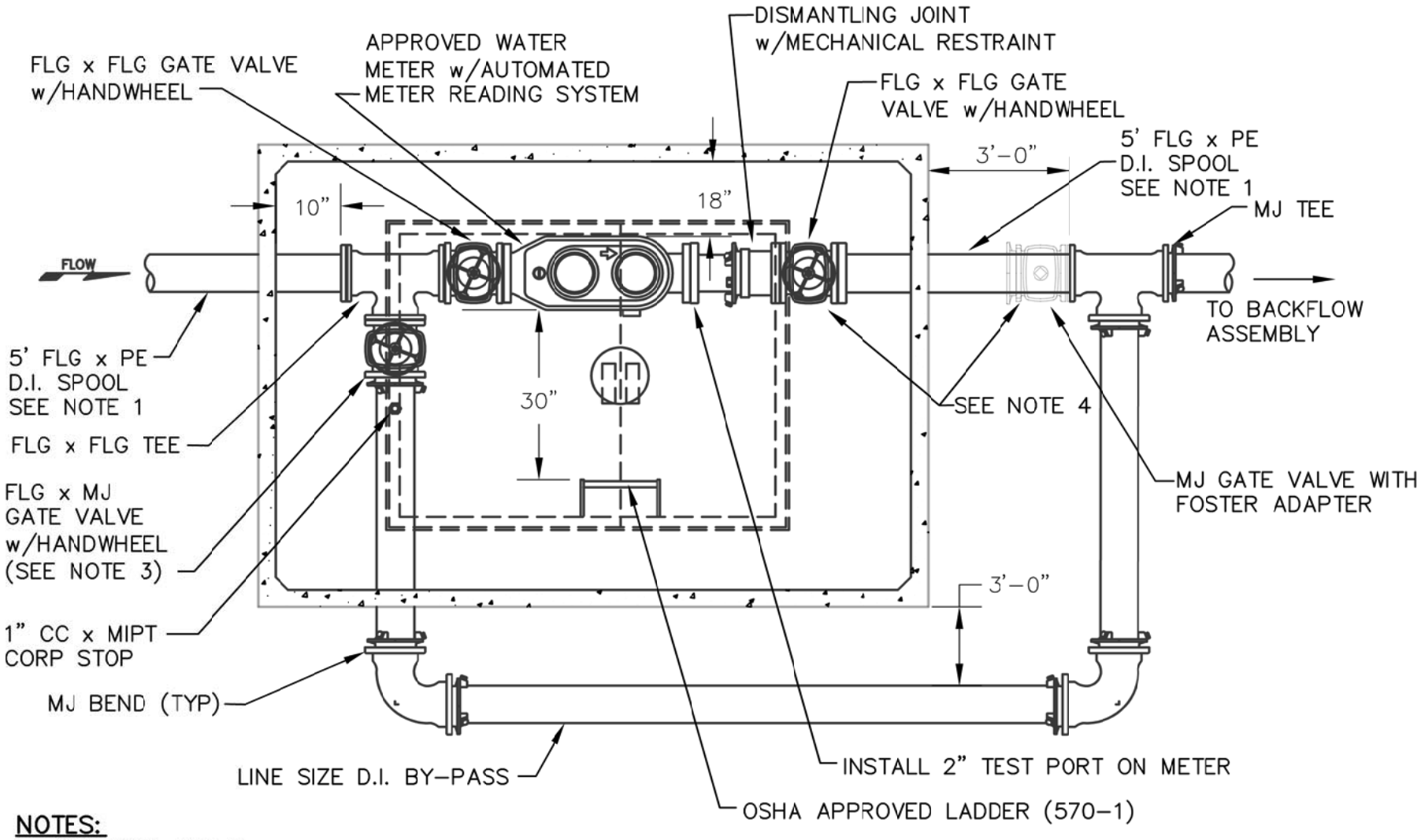


NOTES:

1. SEE 570–5A DETAIL NOTES AND 570–5C PLAN VIEW FOR ADDITIONAL REQUIREMENTS.
2. OSHA APPROVED LADDER NOT SHOWN; SEE PLAN VIEW.

Hillsboro Water	4" AND LARGER TYPICAL WATER METER VAULT (PROFILE)	SCALE: NONE DATE: SEPT 2017	570-4B

FILENAME: 570–4B.DWG



NOTES:

1. ALL PIPE AND FITTINGS SHALL MATCH METER SIZE UNLESS OTHERWISE SPECIFIED.
2. SEE 570-5A DETAIL NOTES AND 570-5B ELEVATION VIEW FOR ADDITIONAL REQUIREMENTS.
3. WATER DEPT SHALL INSTALL CHAIN & LOCK ON BYPASS HANDWHEEL TO PREVENT TAMPERING.
4. FOR METERS 10" AND LARGER, DOWNSTREAM VALVE WILL BE INSTALLED AGAINST EXTERIOR TEE.

Hillsboro Water

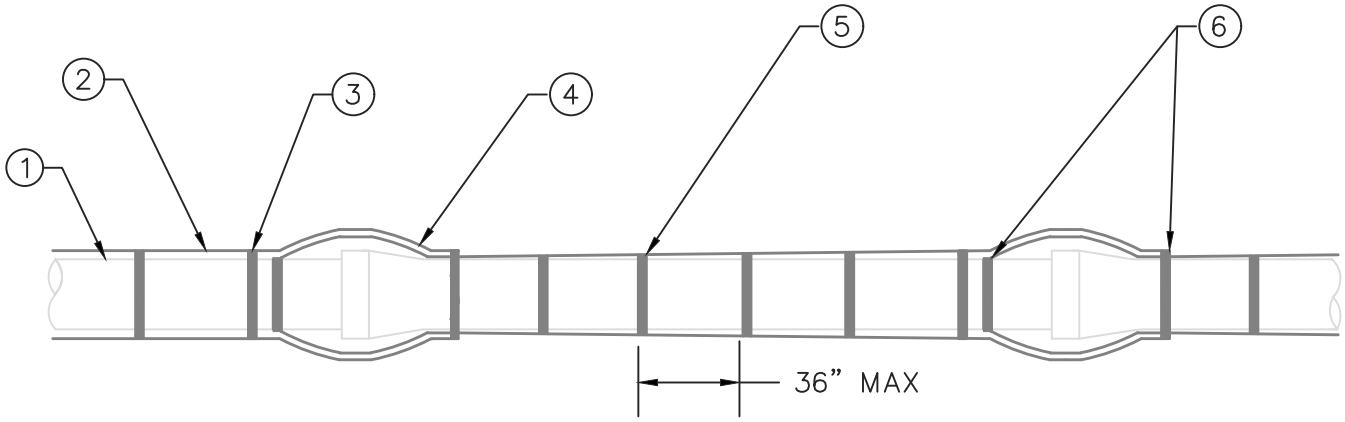
4" AND LARGER WATER METER VAULT (PLAN)

SCALE: NONE

DATE: JULY 2018

570-4C

FILENAME: 570-4C.DWG



KEYNOTES:

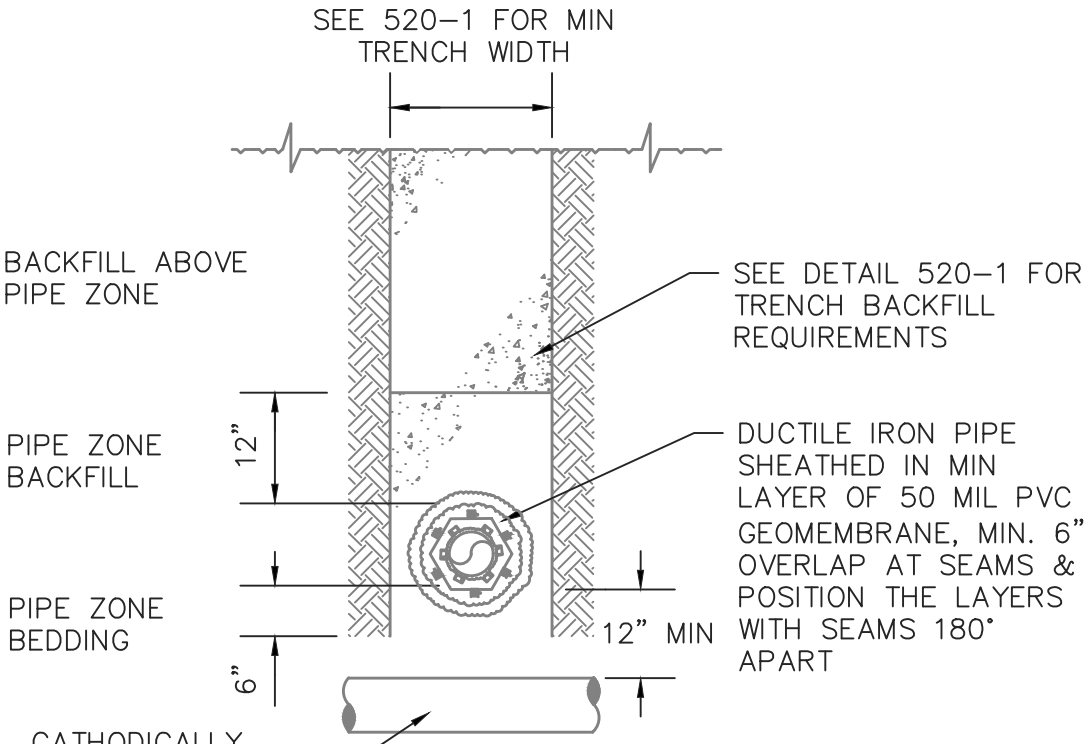
① TYPICAL DUCTILE IRON PIPE WITH PUSH-ON JOINT (SHOWN).
② ONE (1) LAYER 8-MIL HIGH-DENSITY, CROSS-LAMINATED (HDCL) POLYETHYLENE ENCASEMENT TUBE.
③ TYPICAL POLYETHYLENE ADHESIVE TAPE OR PLASTIC TIE STRAPS.
④ LONGITUDINAL OVERLAP POLYETHYLENE TUBE 1-FT MINIMUM AT EACH PIPE JOINT.
⑤ FOLD EXCESS TUBE MATERIAL SNUG AGAINST PIPE AND SECURE IN PLACE.
⑥ SECURE EACH END OF POLYETHYLENE TUBE.

NOTES:

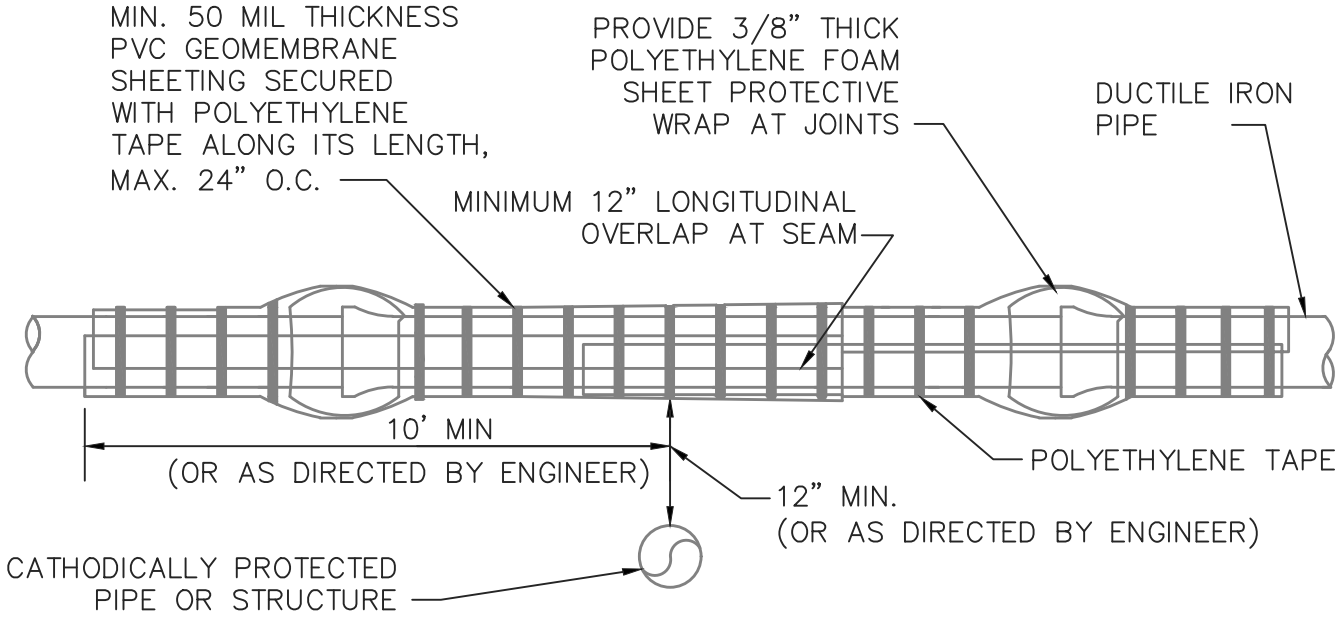
1. INSTALL POLYTHEYLENE TUBE IN ACCORDANCE WITH ANSI/AWWA C105/A21.5 METHOD A.
2. CLEAN PIPE SURFACE OF CLAY, MUD, DEBRIS, ETC. BEFORE INSTALLING POLYETHYLENE ENCASEMENT.
3. PROTECT POLYETHYLENE-ENCASED PIPE WHEN LIFTING OR HANDLING.
4. REPAIR ALL SMALL RIPS, TEARS, OR OTHER DAMAGE TO POLYETHYLENE TUBE WITH ADHESIVE TAPE, OR COVER THE DAMAGED AREA WITH A POLYETHYLENE SHEET AND SEAL THE EDGES WITH ADHESIVE TAPE.
5. AVOID DAMAGE TO POLYETHYLENE DURING BACKFILLING AND COMPACTION WORK.

Hillsboro Water	HDCL POLYETHYLENE ENCASEMENT FOR D.I. PIPE	SCALE: NONE	580-1
		DATE: SEPT 2017	

FILENAME: 580-1 DRAFT.DWG

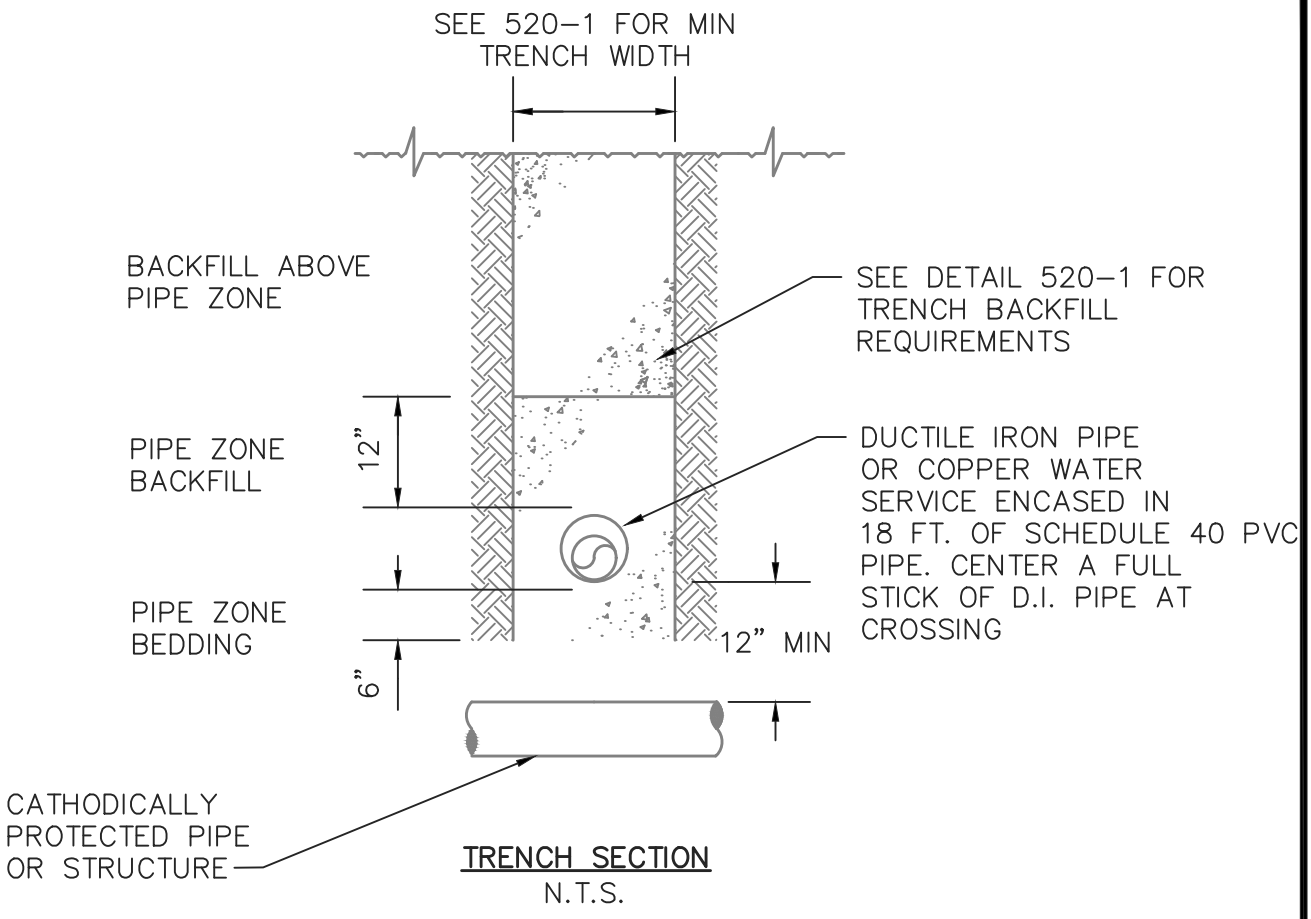


TRENCH SECTION
N.T.S.

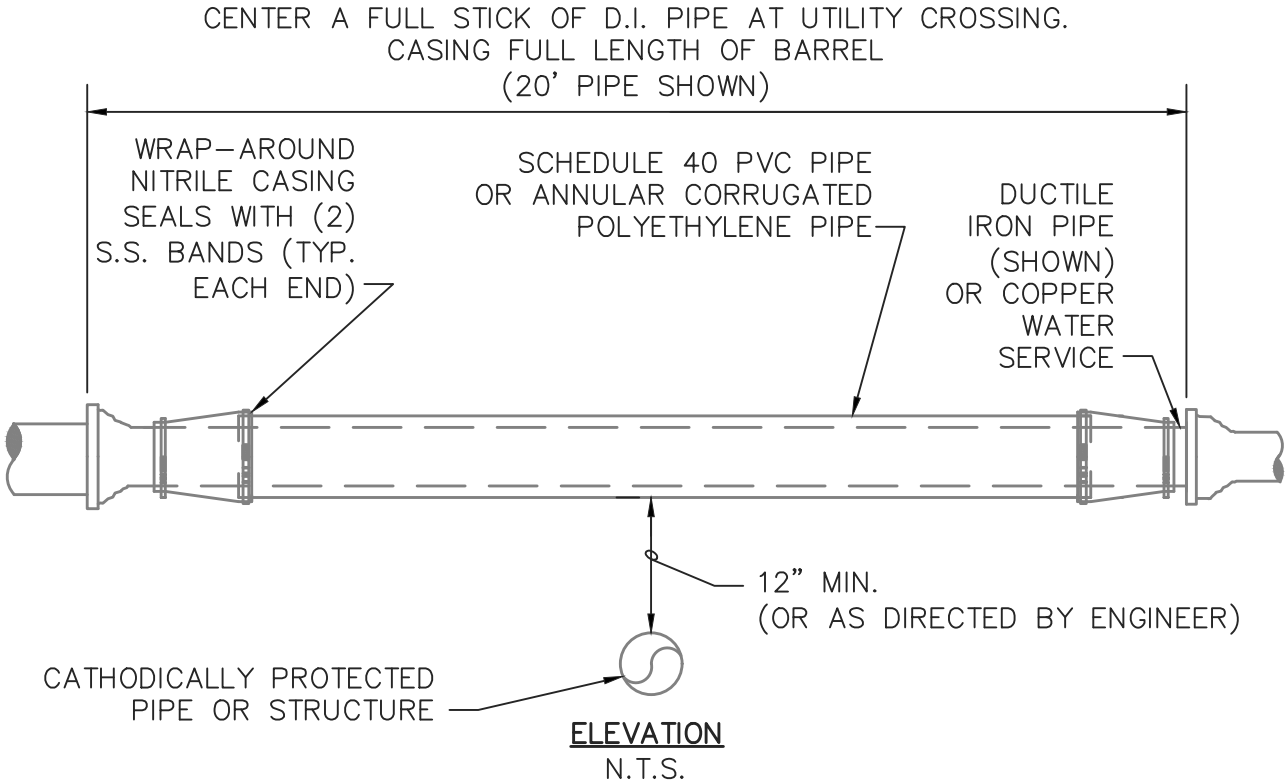


ELEVATION
N.T.S.

Hillsboro Water	**PROTECTIVE GEOMEMBRANE FOR CROSSING CATHODICALLY PROTECTED PIPES OR STRUCTURES**	**SCALE: NONE** **DATE: SEPT 2017**	**580-2**



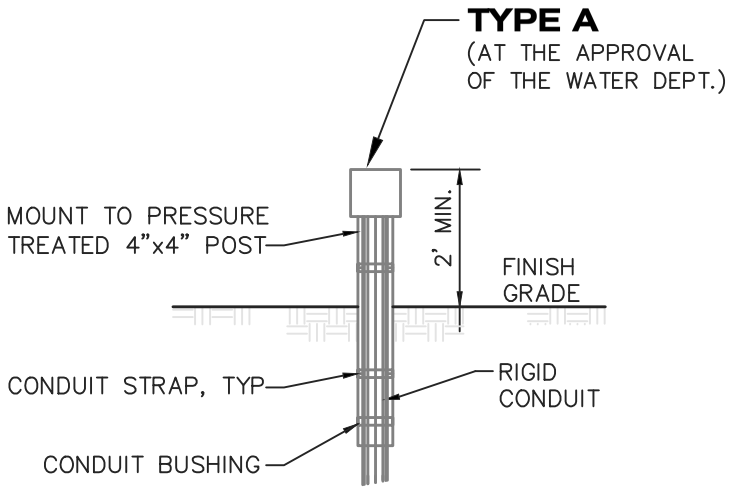
TRENCH SECTION
N.T.S.

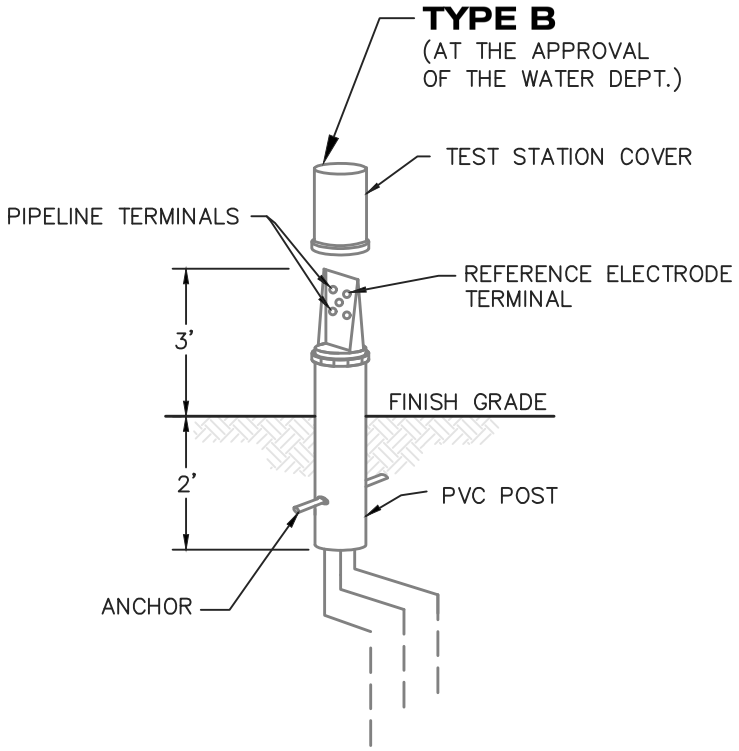


ELEVATION
N.T.S.

Hillsboro Water	PROTECTIVE CASING FOR CROSSING CATHODICALLY PROTECTED PIPES OR STRUCTURES	SCALE: NONE DATE: SEPT 2017	580-3

TEST STATION MOUNTING TYPES:

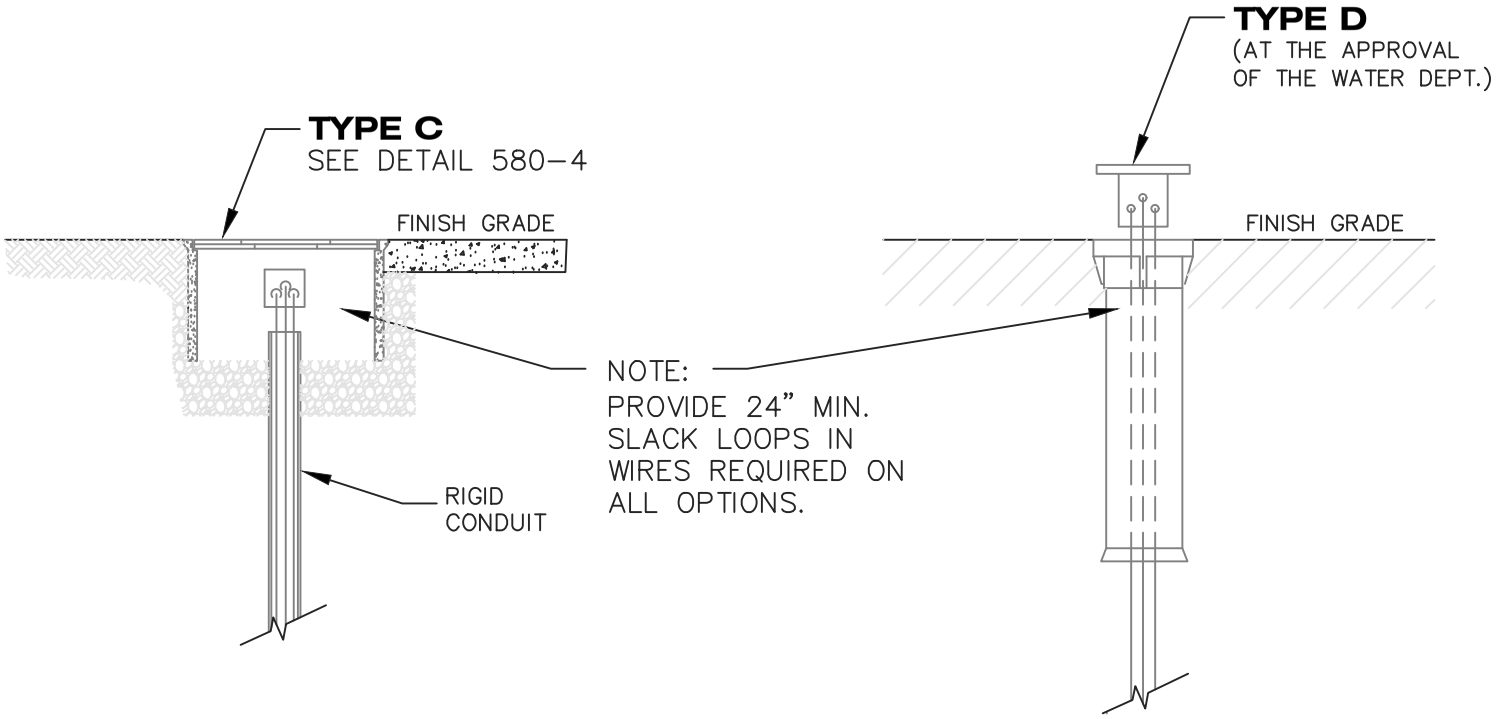




Hillsboro Water	**COMBINED CP TEST STATION ABOVE GRADE INSTALLATION DETAILS**	**SCALE: NONE**	**580-4A**
		DATE: SEPT 2017	

FILENAME: 580-4A DRAFT.DWG

TEST STATION MOUNTING TYPES:

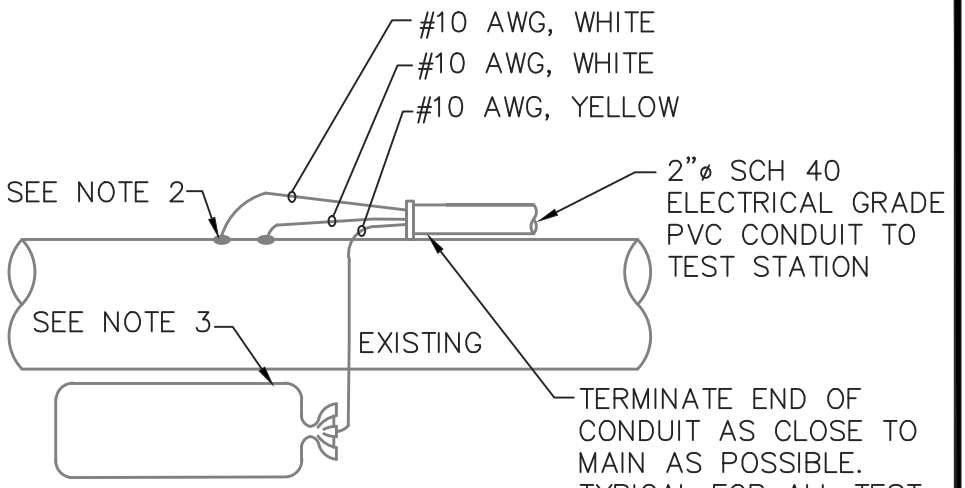


Hillsboro Water	**COMBINED CP TEST STATION BELOW GRADE INSTALLATION DETAILS**	**SCALE: NONE** **DATE: SEPT 2017**	**580-4B**

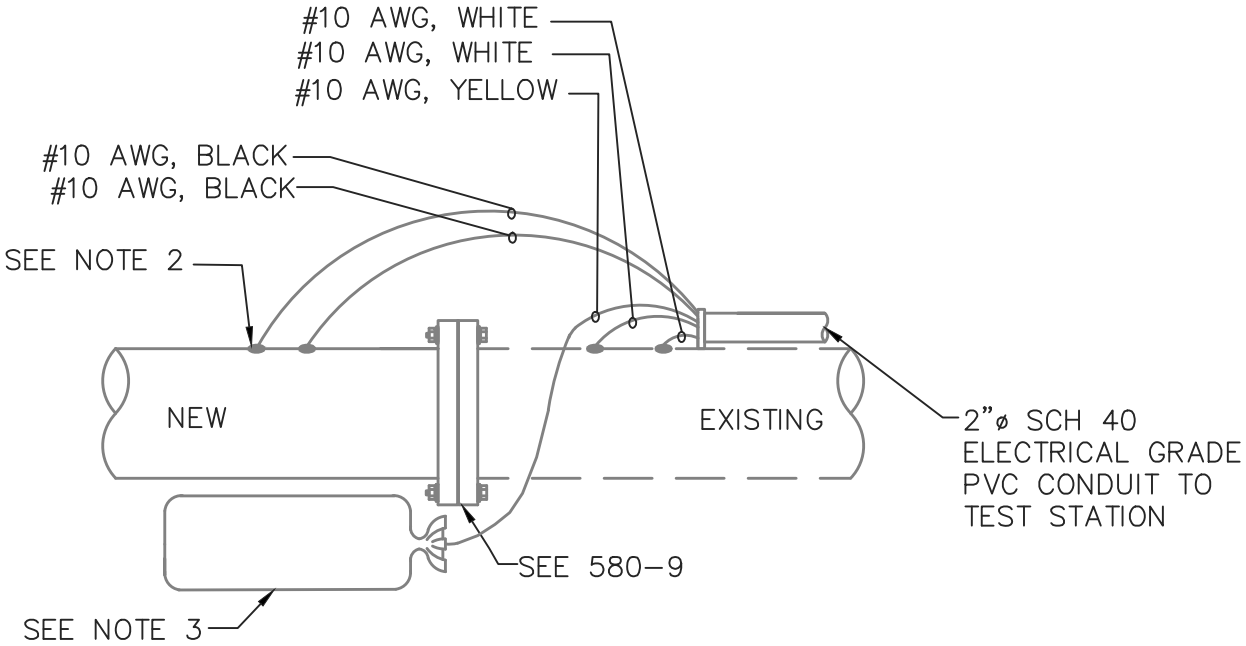
FILENAME: 580–4B DRAFT.DWG

NOTES:

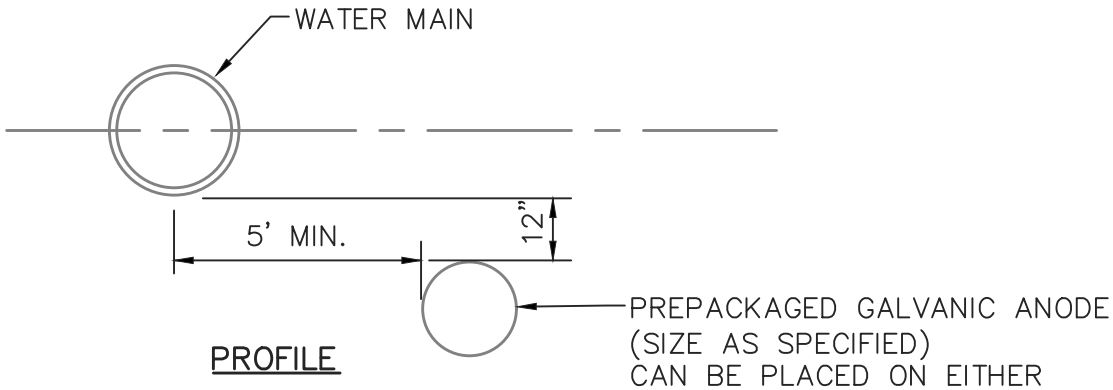
1. WIRE INSTALLATION PER DESIGN & CONST. STD SECTION 580.
2. WIRE CONNECTION, SEE DETAIL 580–7A AND 580–7B.
3. PREPACKAGED GALVANIC ANODE SEE PROFILE BELOW



STANDARD 3–WIRE TEST STATION

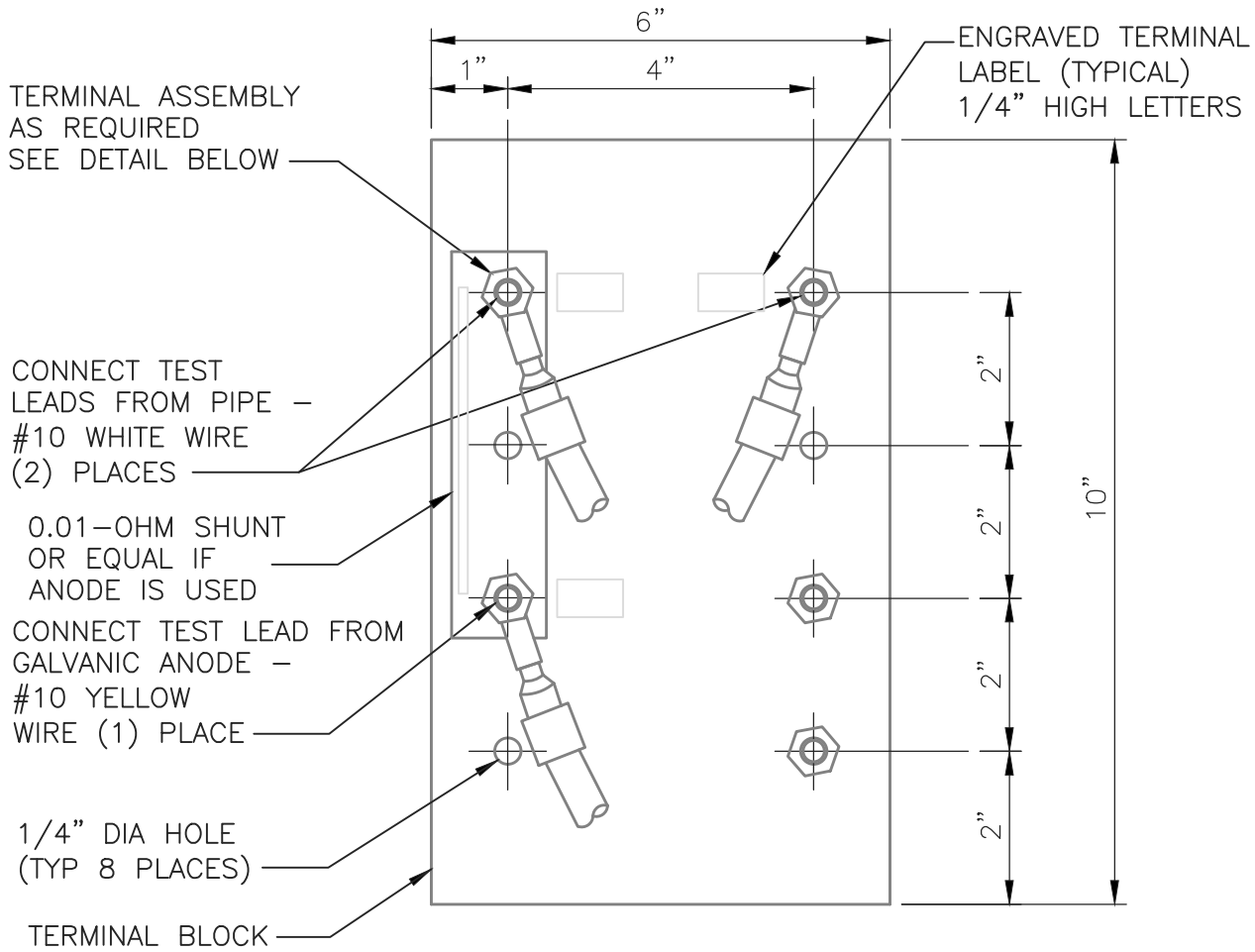


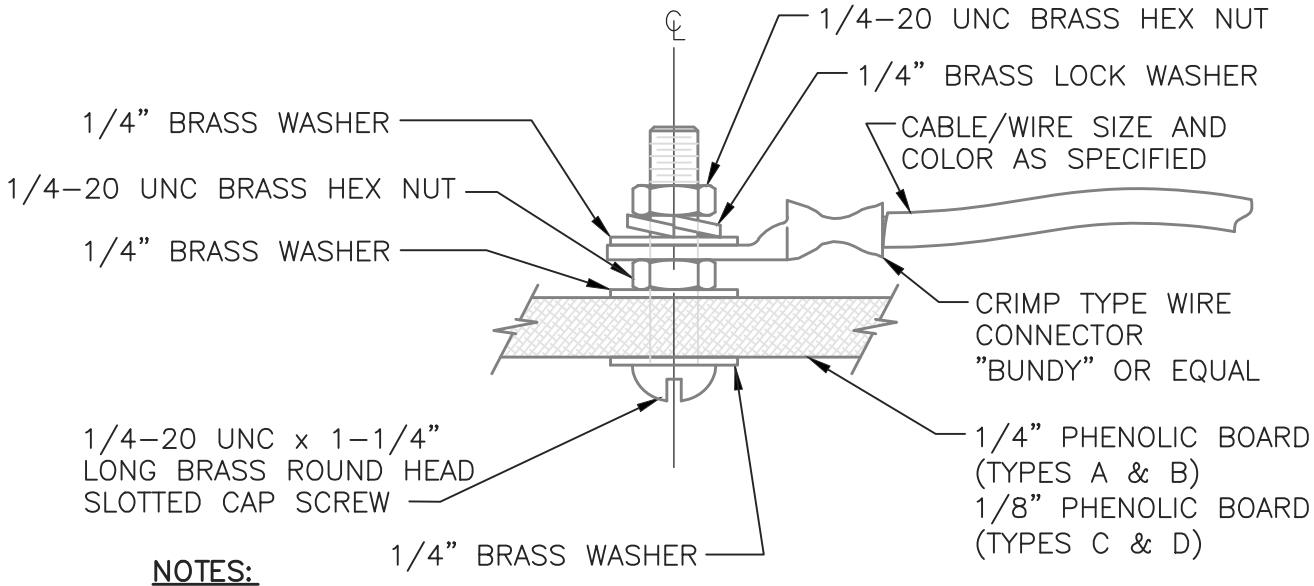
INSULATING FLANGE 5–WIRE TEST STATION



PROFILE

Hillsboro Water	ELECTROLYSIS TEST STATION WIRE INSTALLATION	SCALE: NONE DATE: SEPT 2017	580-5



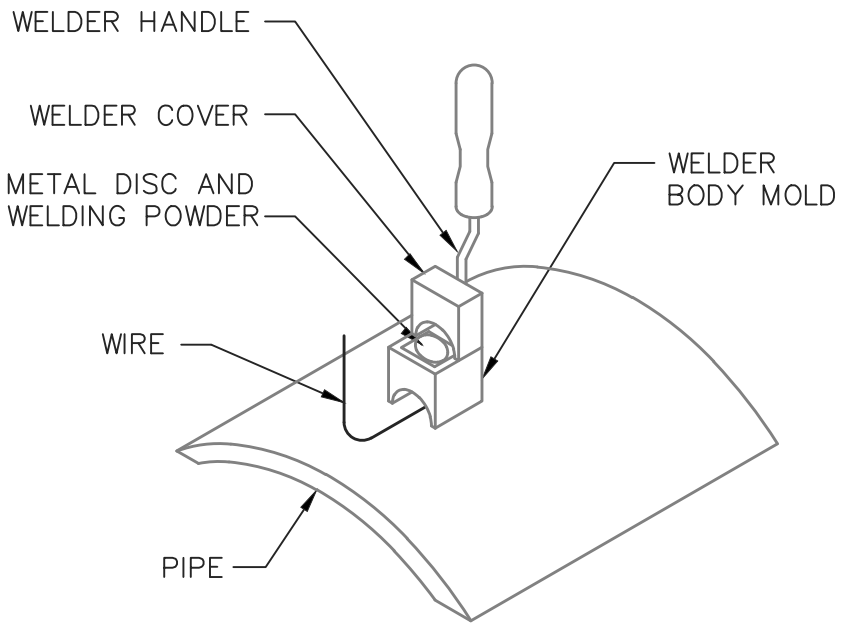


NOTES:

1. PROVIDE SUFFICIENT SLACK IN ALL WIRES SO THAT TEST BOARD CAN BE LIFTED TWO (2) FEET OUT OF TEST BOX.
2. WIRE SHALL BE HMWPE, THWN, XHHW OR RW INSULATED.

Hillsboro Water	TERMINAL BOARD TEST STATION - TYPES A-D	SCALE: NONE DATE: SEPT 2017	580-6

FILENAME: 580–6 DRAFT.DWG



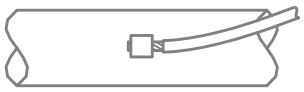
NOTES:

1. PLACE METAL DISC IN BOTTOM OF MOLD BEFORE POURING WELDING POWDER INTO MOLD.

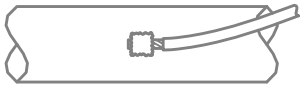
2. INSTALLATION STEPS:

A. FILE CONNECTION AREA (3" x 3") TO BARE SHINY METAL AND CLEAN.

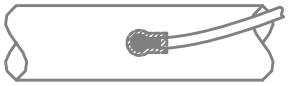
B. STRIP INSULATION FROM WIRE. INSTALL COPPER SLEEVE AS REQUIRED.



C. HOLD WELDER FIRMLY WITH OPENING AWAY FROM FACE AND IGNITE WITH FLINT GUN. WEAR HAND AND EYE PROTECTION, AND ANY OTHER RECOMMENDED PPE.



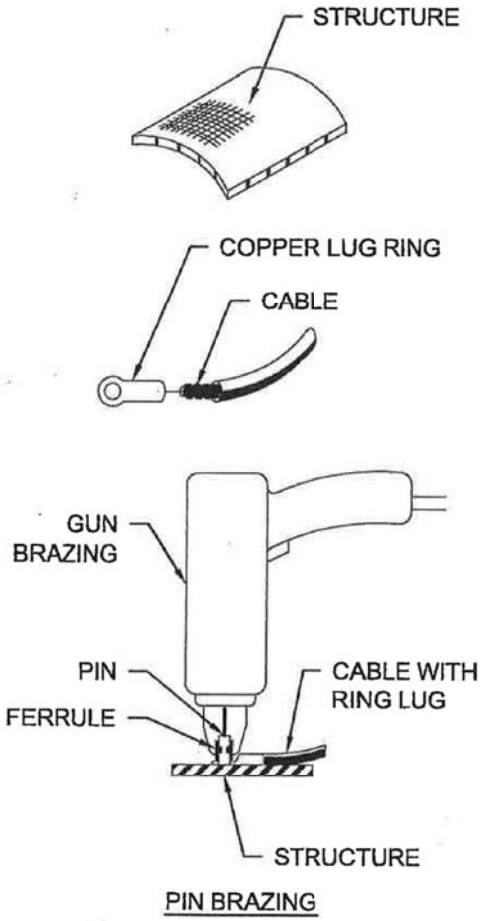
D. REMOVE SLAG FROM CONNECTION AND PEEN WELD FOR SOUNDNESS.



E. FOR CONNECTION TO DUCTILE IRON PIPE, COVER CONNECTION WITH THERMITE WELD CAP, MAKING CERTAIN THAT ALL COPPER IS COVERED. COAT ENTIRE WELD AREA WITH COAL TAR MASTIC.

F. FOR CONNECTION TO MORTAR COATED STEEL PIPE, COVER CONNECTION WITH COAL TAR MASTIC BEFORE REPAIRING MORTAR COATING.

Hillsboro Water	**EXOTHERMIC WELDING PROCEDURE - CABLE TO PIPE CONNECTIONS**	**SCALE: NONE**	**580-7A**
		DATE: SEPT 2017	



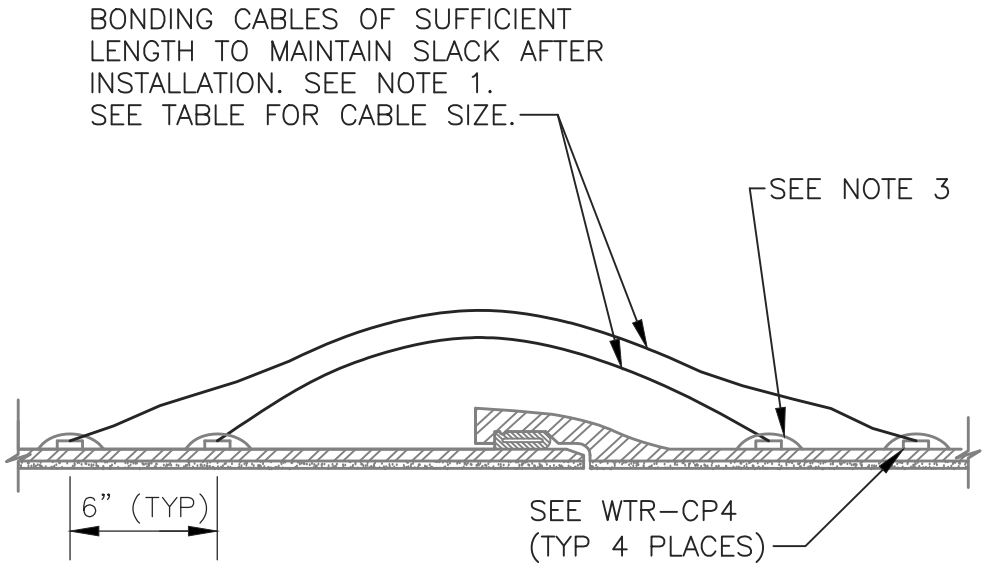
PIN BRAZING

1. DEGREASE AND CLEAN STRUCTURE TO BARE, BRIGHT METAL WITH MECHANICAL DEVICES.
2. STRIP WIRE INSULATION AND ATTACH FROM WIRE AND ATTACH A BAC M1 COMPRESSION TERMINAL OR APPROVED EQUAL.
3. LOAD THE BRAZING GUN WITH A DIRECT BRAZING PIN AND FERRULE. USE A THREADED, TYPE CONNECTION FOR ABOVE-GROUND USE ONLY.
4. BRAZE THE CABLE TO THE PIPE. EXTRA MATERIAL REQUIRED FOR DI OR CI PIPE.
5. TEST BRAZE BY BREAKING OFF THE SHANK OF THE PLAIN PIN WITH A HAMMER.
6. COVER CONNECTION WITH MASTIC FILLED WELD CAP AND BITUMASTIC COATING 80% SOLIDS BY VOLUME OVER WELD CAP AND ALL EXPOSED METAL.
7. ALL WELDS SHALL BE A MINIMUM OF 6" APART.
8. ALLOW WELD COATING TO CURE PER MANUF. RECOM. BEFORE BURIAL.

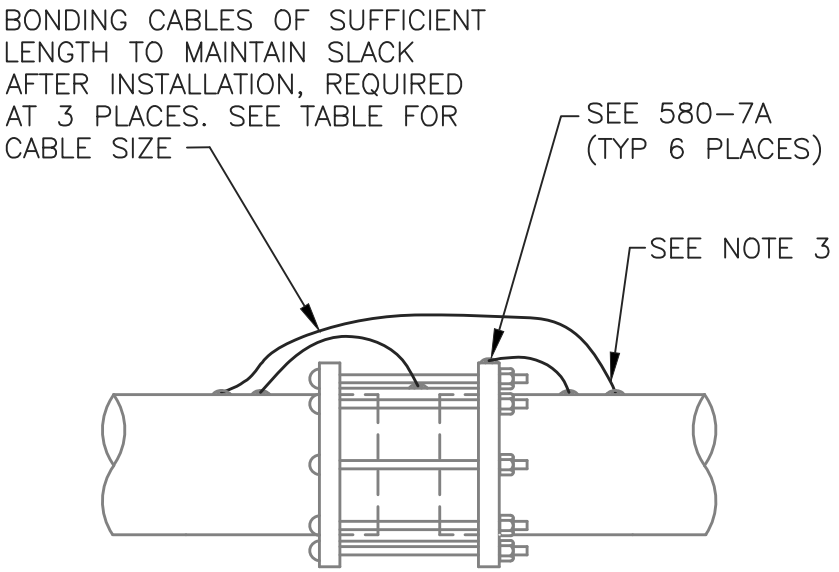
NOTE:

1. PROCEDURE SHOWN ABOVE IS TO BE USED AS A GENERAL GUIDE ONLY. CONSULT MANUFACTURER'S LITERATURE FOR SPECIFIC INSTALLATION INSTRUCTIONS. ALL WELDS SHALL BE A MINIMUM OF 12" APART.

Hillsboro Water	PIN BRAZING PROCEDURE - CABLE TO PIPE CONNECTIONS	SCALE: NONE DATE: SEPT 2017	580-7B



BELL AND SPIGOT RUBBER GASKET JOINT



FLEXIBLE COUPLING OR EXPANSION JOINT

NOTES:

1. TWO BONDING CABLES REQUIRED FOR EACH PIPE JOINT. CABLES TO BE INSTALLED SEPARATELY, APPROX 6" APART ON PIPE.
2. WHEN TEST CABLES ARE REQUIRED, INSTALL IN SAME MANNER AS BONDING CABLES.
3. REPAIR EXTERIOR PIPE COATING IN ACCORDANCE WITH PIPE MANUFACTURER'S RECOMMENDATIONS.

BONDING CABLE SIZES FOR DUCTILE IRON PIPE	
PIPE DIAMETER	CABLE SIZE
2" TO 6"	#8 AWG/HMWPE
8" TO 20"	#4 AWG/HMWPE
24" AND LARGER	#2 AWG/HMWPE

Hillsboro Water

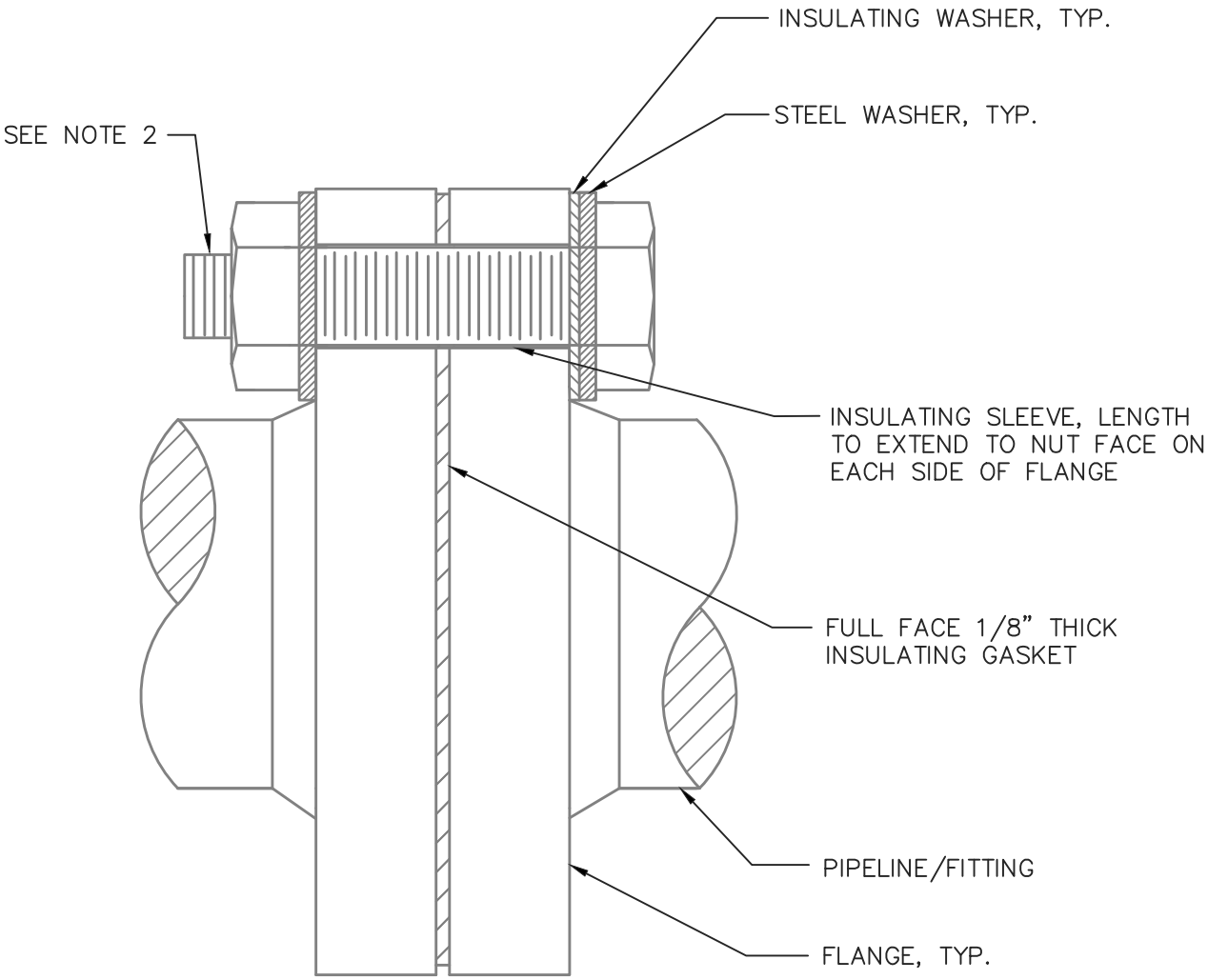
BONDING OF D.I. PIPE JOINTS AND FITTINGS

SCALE: NONE

DATE: SEPT 2017

580-8

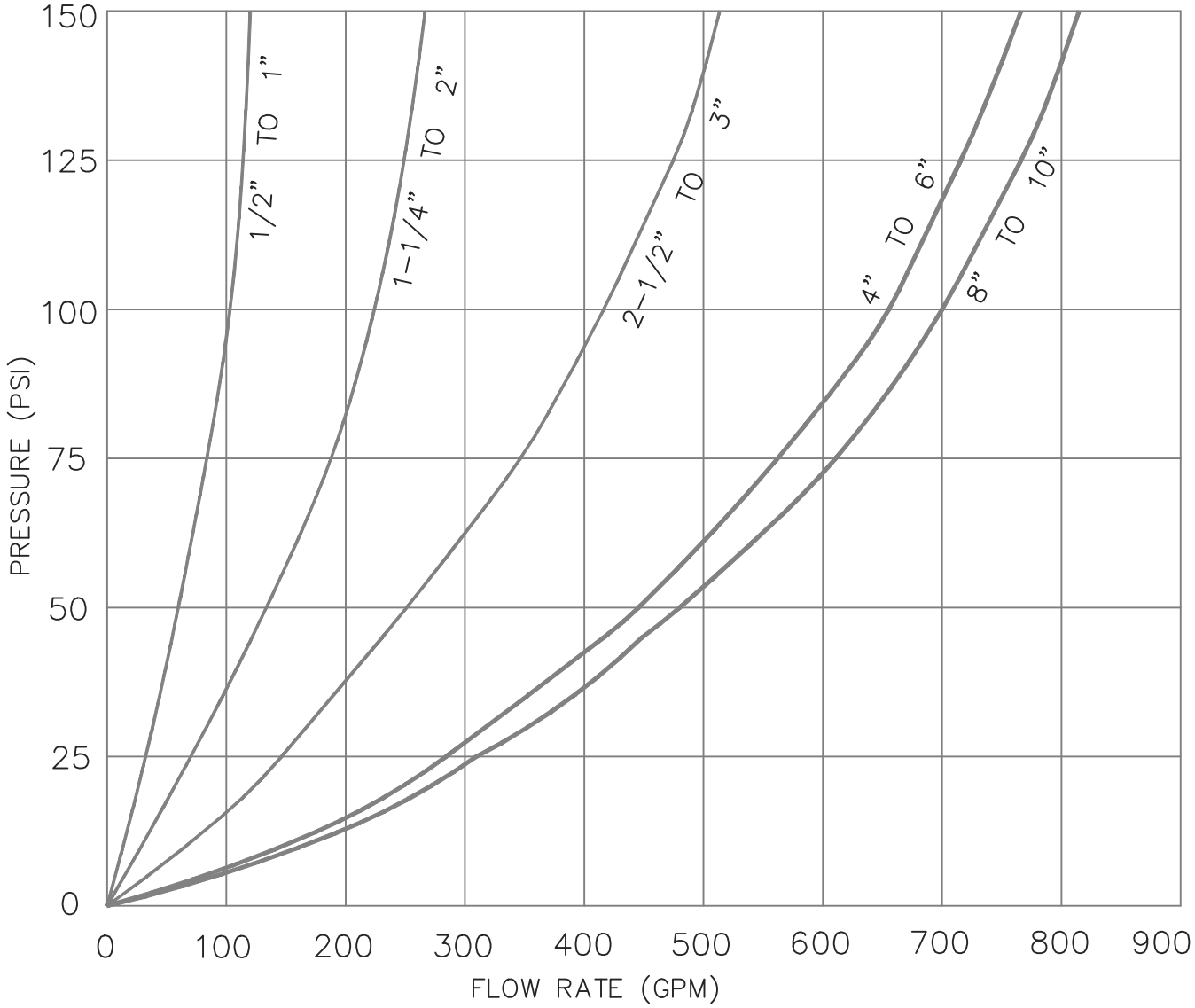
FILENAME: 580-8.DWG



NOTES:

1. BELOW GRADE INSULATING FLANGE INSTALLATION AS SHOWN.
2. BOLT LENGTH SHALL BE LONG ENOUGH TO HAVE A MINIMUM OF THREE THREADS EXPOSED BEYOND NUT WHEN FULLY TIGHTENED.

Hillsboro Water	STANDARD INSULATING FLANGE	SCALE: NONE DATE: SEPT 2017	580-9



APPROXIMATE RELIEF VALVE DISCHARGE RATES
FOR REDUCED PRESSURE BACKFLOW ASSEMBLIES

MAXIMUM FLOW (GPM) PER DRAIN PIPE SIZE FOR EFFECTIVE DRAINAGE OF R.P. DISCHARGE INTO A VAULT. SEE NOTE BELOW.	
PIPE SIZE	FLOW (GPM)
2.5"	105
3"	262
4"	1620

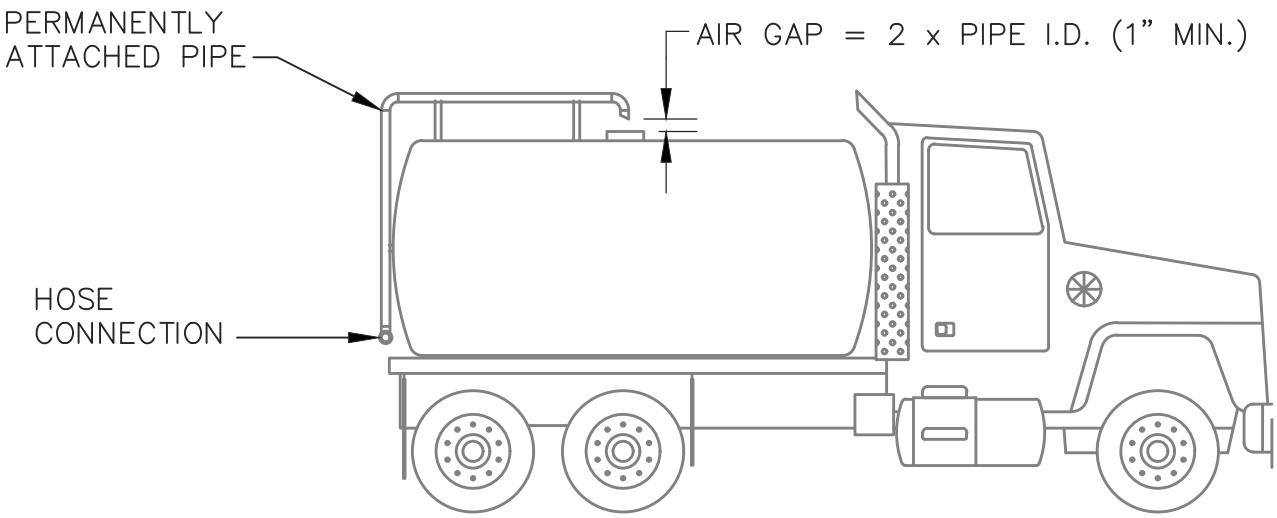
NOTE:

CARE SHOULD BE TAKEN TO ENSURE THAT THE ENTIRE DRAINAGE SYSTEM HAS ADEQUATE CAPACITY TO CARRY THE CONTINUOUS DISCHARGE RATES SHOWN ABOVE. DESIGNER SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATELY SIZED DRAIN LINES FOR THE APPLICABLE RELIEF VALVE DISCHARGE RATE. FOR PARALLEL ASSEMBLIES, THE DRAINAGE SYSTEM SHOULD BE DESIGNED FOR THE DISCHARGE FROM BOTH ASSEMBLIES.

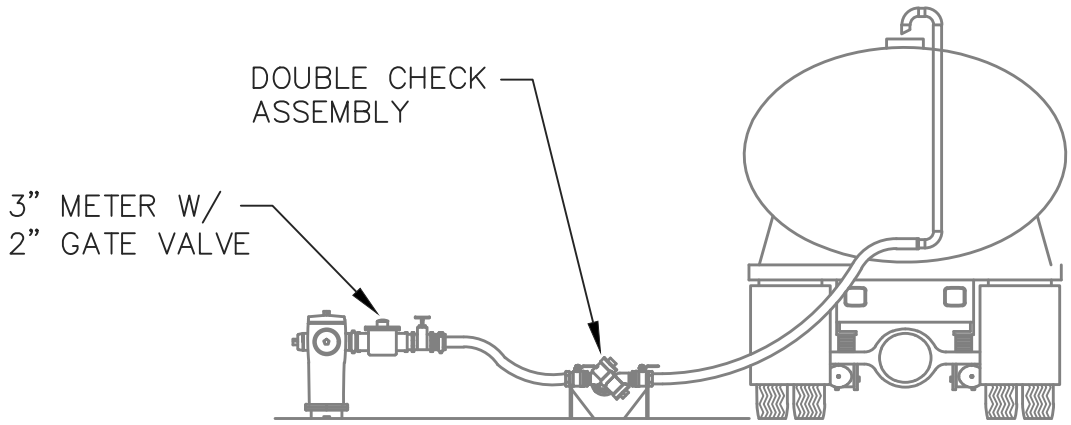
Hillsboro Water	REDUCED PRESSURE BACKFLOW ASSEMBLY (RP) DISCHARGE RATES	SCALE: NONE DATE: SEPT 2017	640-10

FILENAME: 640-10.DWG

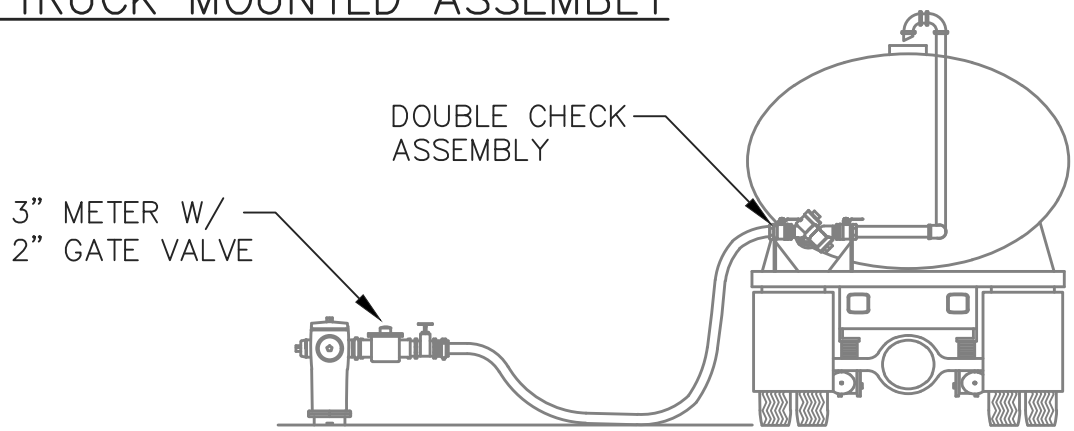
WITH AIR GAP



WITH PORTABLE ASSEMBLY



WITH TRUCK MOUNTED ASSEMBLY



NOTES:

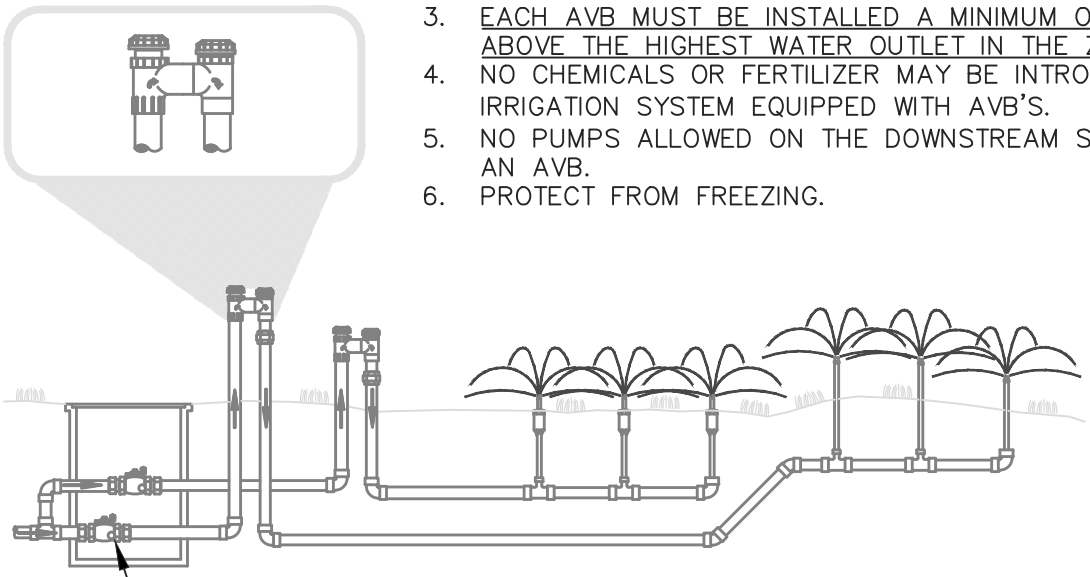
1. REMOVE CHAPMAN VALVE AND HOSE FROM HYDRANT WHEN DONE FILLING TRUCK.
2. CROSS CONNECTION PROTECTION TO BE VERIFIED BY WATER DEPARTMENT WHEN PURCHASING BULK WATER PERMIT.

Hillsboro Water	**CROSS CONNECTION PROTECTION FOR TANKER TRUCKS**	**SCALE: NONE**	**640-1**
		DATE: SEPT 2017	

FILENAME: 640–1 DRAFT.DWG

A V B – ATMOSPHERIC VACUUM BREAKER

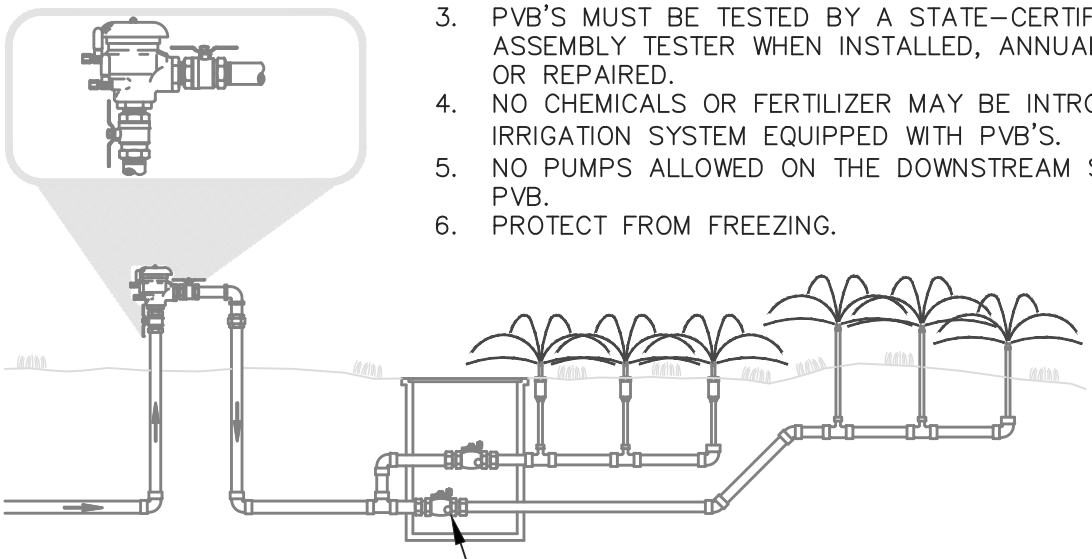
1. ONE AVB REQUIRED FOR EACH IRRIGATION ZONE.
2. NO CONTROL VALVES (ON/OFF VALVES) ALLOWED DOWNSTREAM OF (AFTER) AN AVB.
3. EACH AVB MUST BE INSTALLED A MINIMUM OF SIX INCHES (6") ABOVE THE HIGHEST WATER OUTLET IN THE ZONE IT SERVES.
4. NO CHEMICALS OR FERTILIZER MAY BE INTRODUCED INTO AN IRRIGATION SYSTEM EQUIPPED WITH AVB'S.
5. NO PUMPS ALLOWED ON THE DOWNSTREAM SIDE OF (AFTER) AN AVB.
6. PROTECT FROM FREEZING.



TYPICAL UPSTREAM SHUTOFF VALVES WITH DRAIN

P V B – PRESSURE VACUUM BREAKER ASSEMBLY

1. ONLY ONE PVB REQUIRED TO SERVE THE ENTIRE SYSTEM. CONTROL VALVES (ON/OFF VALVES) ARE ALLOWED DOWNSTREAM OF (AFTER) THE PVB.
2. PVB'S MUST BE INSTALLED A MINIMUM OF ONE FOOT (12") ABOVE THE HIGHEST WATER OUTLET.
3. PVB'S MUST BE TESTED BY A STATE–CERTIFIED BACKFLOW ASSEMBLY TESTER WHEN INSTALLED, ANNUALLY, AND WHEN MOVED OR REPAIRED.
4. NO CHEMICALS OR FERTILIZER MAY BE INTRODUCED INTO AN IRRIGATION SYSTEM EQUIPPED WITH PVB'S.
5. NO PUMPS ALLOWED ON THE DOWNSTREAM SIDE OF (AFTER) A PVB.
6. PROTECT FROM FREEZING.

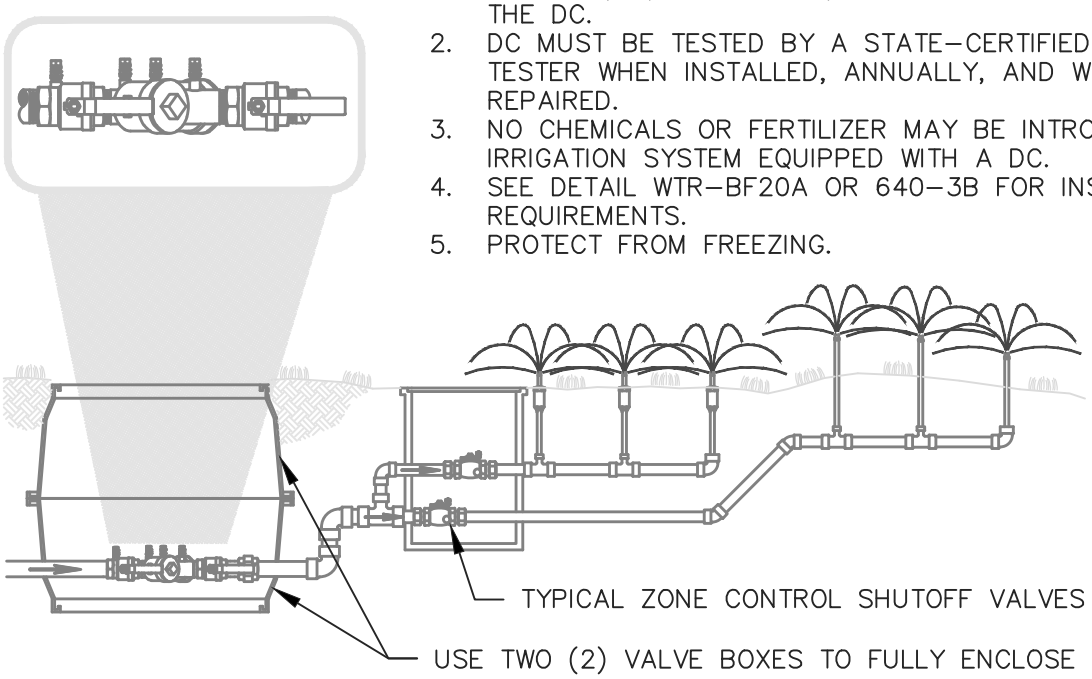


TYPICAL ZONE CONTROL SHUTOFF VALVES

Hillsboro Water	**BACKFLOW PREVENTERS FOR RESIDENTIAL IRRIGATION SYSTEMS**	**SCALE: NONE**	**640-2A**
		DATE: SEPT 2017	

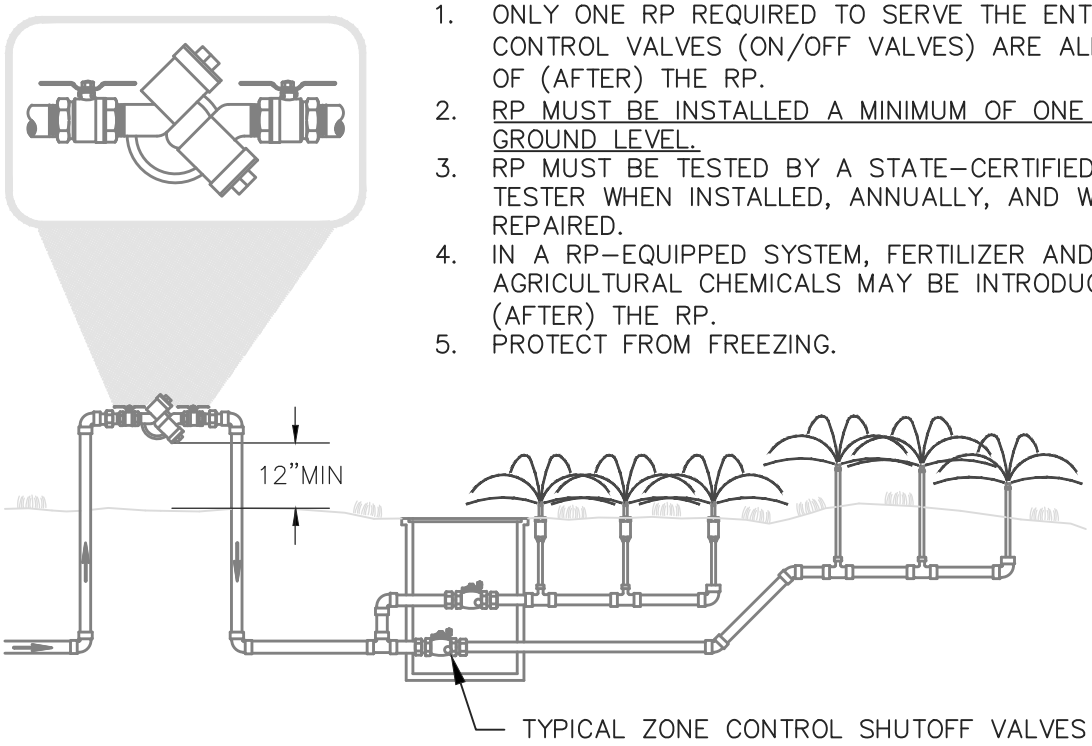
D C – DOUBLE CHECK VALVE ASSEMBLY

1. ONLY ONE DC REQUIRED TO SERVE THE ENTIRE SYSTEM. CONTROL VALVES (ON/OFF VALVES) ARE ALLOWED DOWNSTREAM OF (AFTER) THE DC.
2. DC MUST BE TESTED BY A STATE–CERTIFIED BACKFLOW ASSEMBLY TESTER WHEN INSTALLED, ANNUALLY, AND WHEN MOVED OR REPAIRED.
3. NO CHEMICALS OR FERTILIZER MAY BE INTRODUCED INTO AN IRRIGATION SYSTEM EQUIPPED WITH A DC.
4. SEE DETAIL WTR–BF20A OR 640–3B FOR INSTALLATION REQUIREMENTS.
5. PROTECT FROM FREEZING.

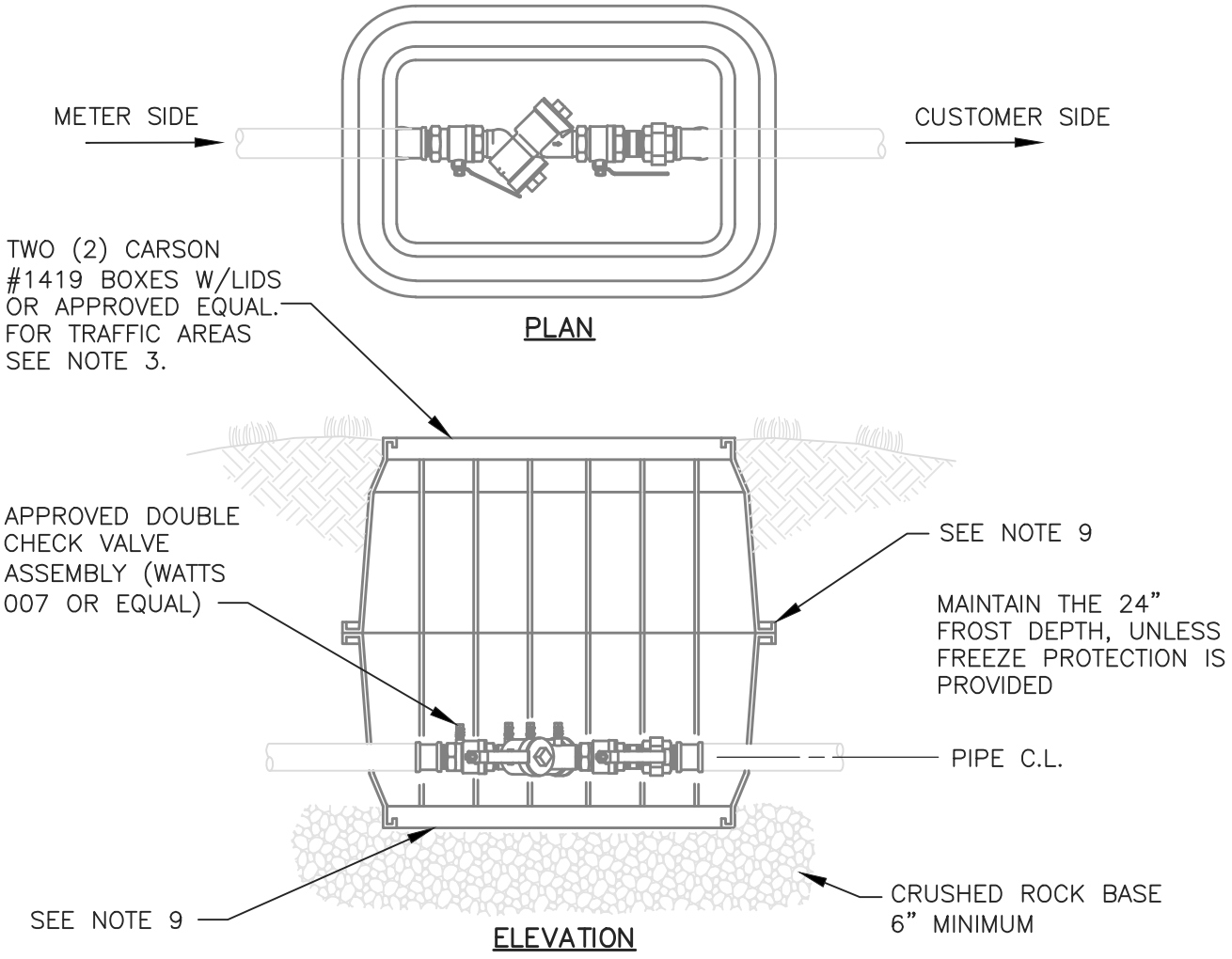


R P – REDUCED PRESSURE PRINCIPLE BACKFLOW ASSY.

1. ONLY ONE RP REQUIRED TO SERVE THE ENTIRE SYSTEM. CONTROL VALVES (ON/OFF VALVES) ARE ALLOWED DOWNSTREAM OF (AFTER) THE RP.
2. RP MUST BE INSTALLED A MINIMUM OF ONE FOOT (12") ABOVE GROUND LEVEL.
3. RP MUST BE TESTED BY A STATE–CERTIFIED BACKFLOW ASSEMBLY TESTER WHEN INSTALLED, ANNUALLY, AND WHEN MOVED OR REPAIRED.
4. IN A RP–EQUIPPED SYSTEM, FERTILIZER AND OTHER AGRICULTURAL CHEMICALS MAY BE INTRODUCED DOWNSTREAM OF (AFTER) THE RP.
5. PROTECT FROM FREEZING.



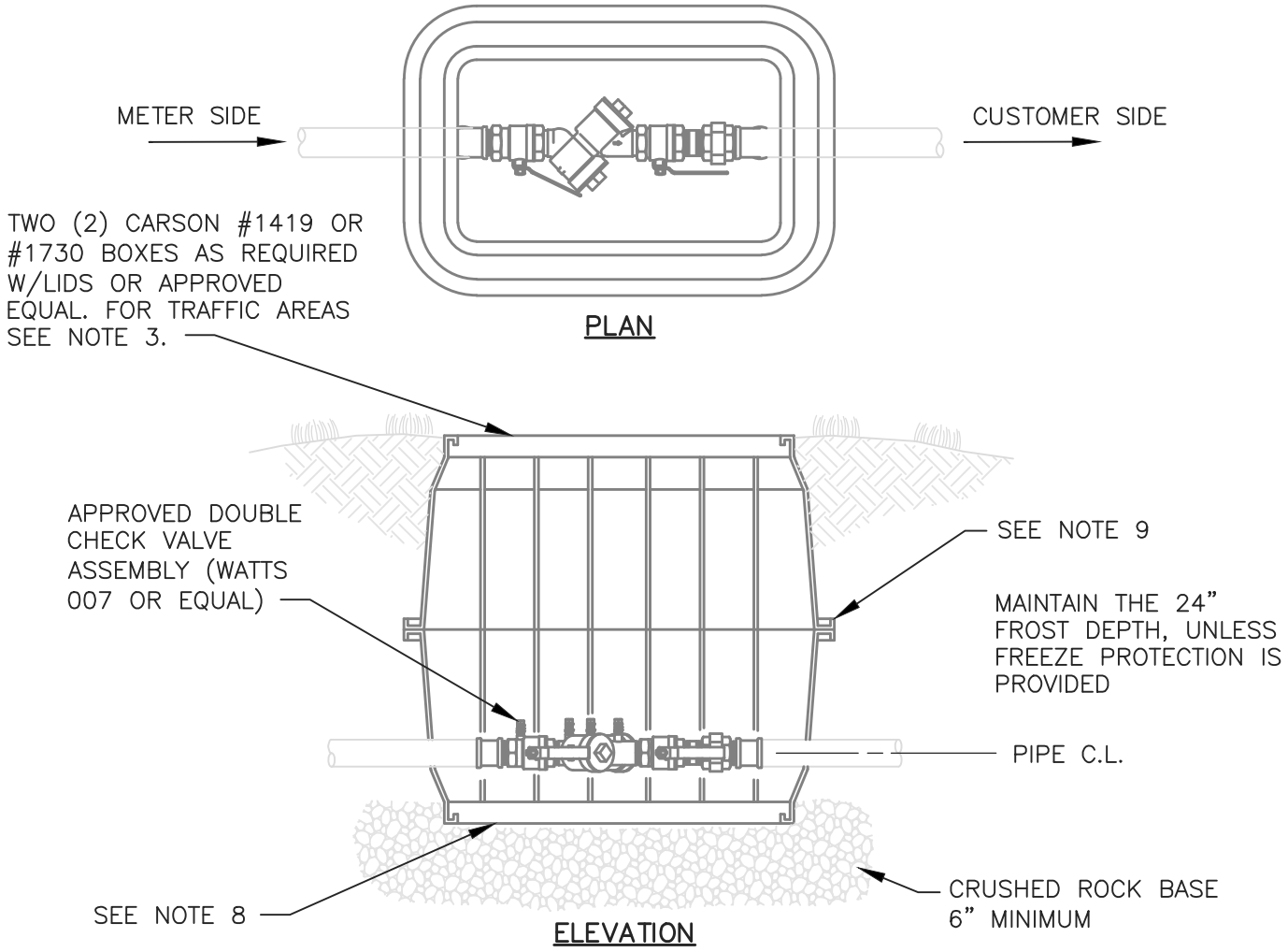
Hillsboro Water	**TYPICAL BACKFLOW PREVENTERS FOR RESIDENTIAL IRRIGATION SYSTEMS**	**SCALE: NONE** **DATE: SEPT 2017**	**640-2B**



NOTES:

1. PLACE DC WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND DC.
2. BACKFLOW PREVENTION ASSEMBLIES FOR THE PROTECTION OF THE PUBLIC WATER SYSTEM SHALL MEET THE REQUIREMENTS SET FORTH IN THE CURRENT EDITIONS OF OREGON ADMINISTRATIVE RULES (OAR) CHAPTER 333-061-0070 AND THE OREGON PLUMBING SPECIALTY CODE (OPSC).
3. ALL BOXES LOCATED IN TRAFFIC AREAS SHALL BE RATED FOR THE ANTICIPATED LOADS AND FURNISHED WITH APPROVED TRAFFIC-RATED COVERS.
4. DC'S SHALL BE READILY ACCESSIBLE WITH ADEQUATE SPACE FOR TESTING AND MAINTENANCE. PROVIDE AT LEAST 6 INCHES OF CLEARANCE ON BOTH SIDES AND BELOW THE DC.
5. WHEN THE DC IS INSTALLED BELOW GROUND, THE TEST PORTS MUST NOT FACE DOWNWARD. TEST PORTS MUST BE PROVIDED WITH PLASTIC OR BRASS PLUGS.
6. THE DC SHALL BE INSTALLED AT A DEPTH OF 24 INCHES BELOW GROUND. IF FREEZE PROTECTION IS PROVIDED, THE 24 INCH DEPTH MAY BE REDUCED.
7. CONTACT HILLSBORO BUILDING DEPARTMENT FOR THE REQUIRED PLUMBING PERMIT.
8. UPON COMPLETION OF INSTALLATION, THE DC MUST BE TESTED BY A STATE CERTIFIED BACKFLOW TESTER.
9. CONNECT BOXES TOGETHER WITH CORROSION-RESISTANT FASTENERS TO FORM A SINGLE ENCLOSURE. SECURE THE LID OF THE LOWER BOX TO PREVENT DEBRIS FROM ENTERING.
10. CONSULT WITH BUILDING DEPARTMENT FOR PROPER SIZING OF DC.

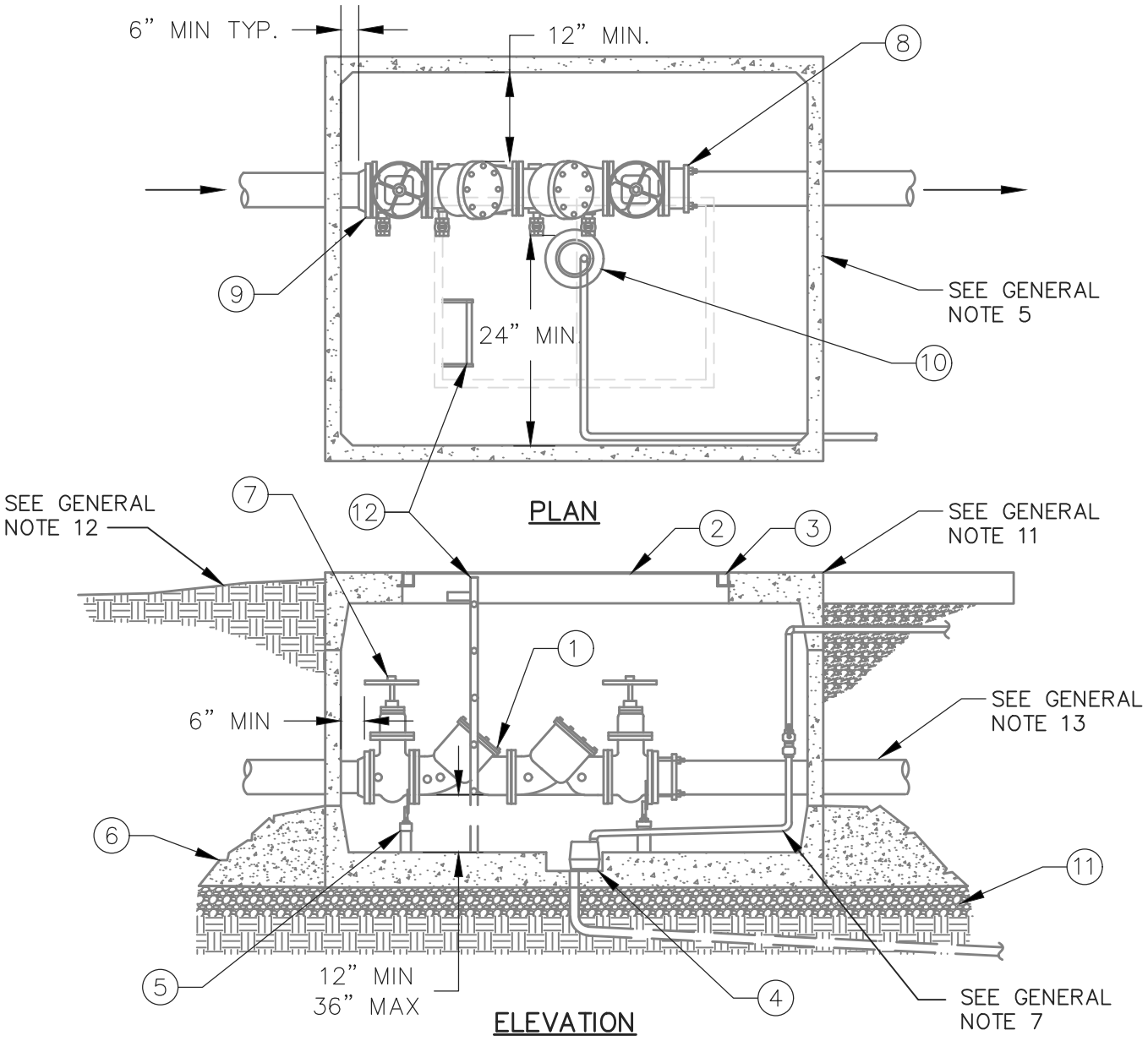
Hillsboro Water	**3/4" TO 1" DOUBLE CHECK VALVE ASSEMBLY (DC)**	**SCALE: NONE**	**640-3A**
		DATE: SEPT 2017	



NOTES:

1. PLACE DC WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND DC.
2. BACKFLOW PREVENTION ASSEMBLIES FOR THE PROTECTION OF THE PUBLIC WATER SYSTEM SHALL MEET THE REQUIREMENTS SET FORTH IN THE CURRENT EDITIONS OF OREGON ADMINISTRATIVE RULES (OAR) CHAPTER 333-061-0070 AND THE OREGON PLUMBING SPECIALTY CODE (OPSC).
3. ALL BOXES LOCATED IN TRAFFIC AREAS SHALL BE RATED FOR THE ANTICIPATED LOADS AND FURNISHED WITH APPROVED TRAFFIC-RATED COVERS.
4. DC'S SHALL BE READILY ACCESSIBLE WITH ADEQUATE SPACE FOR TESTING AND MAINTENANCE. PROVIDE AT LEAST 6 INCHES OF CLEARANCE ON BOTH SIDES AND BELOW THE DC.
5. WHEN THE DC IS INSTALLED BELOW GROUND, THE TEST PORTS MUST NOT FACE DOWNWARD. TEST PORTS MUST BE PROVIDED WITH PLASTIC OR BRASS PLUGS.
6. THE DC SHALL BE INSTALLED AT A MAXIMUM DEPTH OF 24 INCHES BELOW GROUND. IF FREEZE PROTECTION IS PROVIDED, THE 24 INCH DEPTH MAY BE REDUCED.
7. CONTACT HILLSBORO BUILDING DEPARTMENT FOR THE REQUIRED PLUMBING PERMIT.
8. UPON COMPLETION OF INSTALLATION, THE DC MUST BE TESTED BY A STATE CERTIFIED BACKFLOW TESTER.
9. CONNECT BOXES TOGETHER WITH CORROSION-RESISTANT FASTENERS TO FORM A SINGLE ENCLOSURE. SECURE THE LID OF THE LOWER BOX TO PREVENT DEBRIS FROM ENTERING.
10. CONSULT WITH BUILDING DEPARTMENT FOR PROPER SIZING OF DC.

Hillsboro Water	1-1/4" TO 2" DOUBLE CHECK VALVE ASSEMBLY (DC)	SCALE: NONE DATE: SEPT 2017	640-3B



KEYNOTES:

1. APPROVED DOUBLE CHECK (DC) ASSEMBLY PER STANDARDS
2. CONCRETE VAULT WITH ACCESS HATCH DOORS
3. TYPICAL VAULT DOOR
4. SUMP PUMP INCLUDING 1–1/2" PVC DISCHARGE PIPING WITH CHECK VALVE, OR 4" PVC GRAVITY DRAIN WITH BACKWATER VALVE TO STORM SEWER
5. TYPICAL PIPE SUPPORS PER GENERAL NOTE 10
6. TYPICAL CONCRETE BALLAST, SEE GENERAL NOTE 8
7. TYPICAL NON–RISING STEM (N.R.S.) GATE VALVES
8. FLANGE COUPLING ADAPTER
9. ADAPTER FLANGE
10. 12" DIA SUMP WITH PUMP OR GRAVITY DRAIN
11. COMPACTED CLASS B BACKFILL BASE 6" MINIMUM
12. OSHA–APPROVED LADDER, SEE 570–1

NOTES:

REFER TO WTR–BF100B FOR GENERAL NOTES AND ADDITIONAL REQUIREMENTS.

Hillsboro Water	**3" AND LARGER TYPICAL DOUBLE CHECK VALVE ASSEMBLY (DC)**	**SCALE: NONE** **DATE: SEPT 2017**	**640-4A**

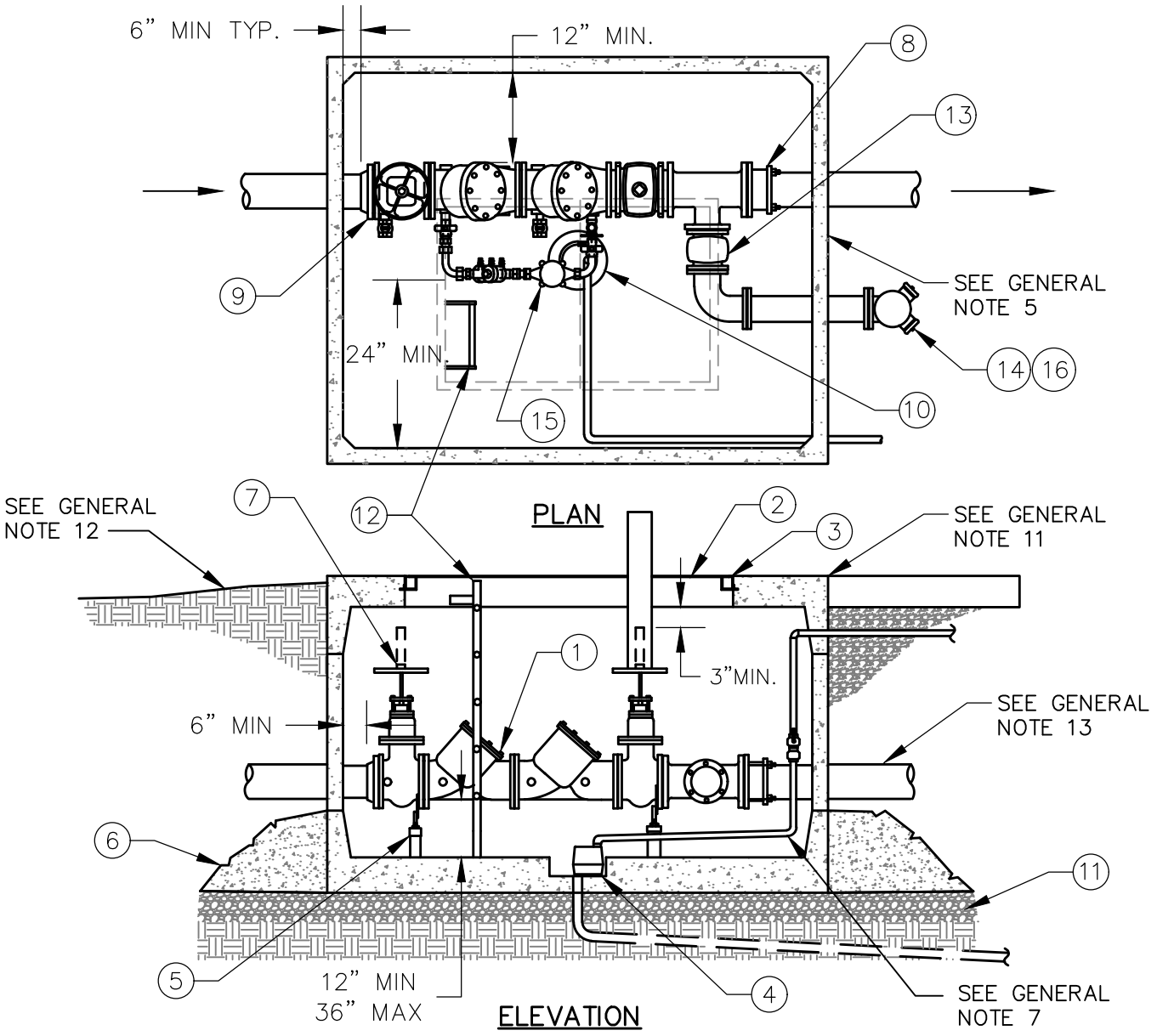
VAULT INFORMATION		
DCVA SIZE	OLDCASTLE VAULT NO.	DOOR MODEL NO.
3"	577–LA	57–T–2–332P
4"	577–LA	57–T–2–332P
6"	676–WA	676–T–2–332P
8"	687–WA	687–T–2–332P
10"	5106–WA	5106–3–T–2–332P
OR APPROVED EQUAL		

GENERAL NOTES:

1. PLACE DC ASSEMBLY WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND DC.
2. THIS IS TO BE A PRIVATE FACILITY, GOVERNED BY OPSC AND OREGON HEALTH AUTHORITY, AS APPLICABLE.
3. ALL MJ JOINTS SHALL HAVE MECHANICAL JOINT RESTRAINTS.
4. CONTRACTOR TO SEAL ALL OPENINGS IN VAULT WITH NON–SHRINK GROUT OR "LINK–SEAL."
5. COAT ALL EXTERIOR VAULT SURFACES WITH CO–MA–SEAL OR APPROVED EQUAL.
6. PROVIDE POWER SOURCE AS REQUIRED FOR SUMP PUMP. SECURE POWER CORD TO DISCHARGE PIPING WITH NYLON CABLE TIES. SEE 570–2 FOR SUMP PUMP INSTALLATION DETAILS.
7. PUMP DISCHARGE TO APPROVED LOCATION PER PLUMBING INSPECTOR.
8. IN AREAS PRONE TO HIGH GROUNDWATER POUR CONCRETE BALLAST (3 CUBIC YARDS MINIMUM); ENGINEER IS RESPONSIBLE TO ENSURE ADEQUATE BALLAST IS PROVIDED TO PREVENT FLOATING OF VAULT.
9. VAULT DOOR MECHANISMS SHALL NOT PROTRUDE BELOW THE CEILING OF THE VAULT INTERIOR.
10. ASSEMBLY IS TO BE SUPPORTED BY A SUBSTANTIAL RUST–RESISTANT PRODUCT SUCH AS "STANDON" OR APPROVED EQUAL TO PREVENT UNDUE STRESS OR STRAIN ON THE ASSEMBLY AND PIPING.
11. VAULT TOP SHALL BE SET LEVEL WITH ADJACENT HARD SURFACE (CONCRETE OR AC PAVEMENT).
12. FOR INSTALLATION IN LANDSCAPE AREA, PLACE VAULT TOP 3"–5" ABOVE GROUND SURFACE AND SLOPE GROUND AWAY AT ¼" PER FOOT TYPICAL. DO NOT BURY HATCH DRAIN.
13. EXTEND DUCTILE IRON PIPE 5' MINIMUM OUT OF VAULT TO PROTECT FROM BREAKING DUE TO VAULT SETTLEMENT.
14. SEE 640–4A FOR PLAN AND ELEVATION VIEWS.
15. CONSULT WITH BUILDING DEPARTMENT FOR PROPER SIZING OF DC.
16. WHEN LOCATED IN PEDESTRIAN WALKWAY A NON–SLIP LID AND GROUTED PICK HOLES ARE REQUIRED.

Hillsboro Water	3" AND LARGER DOUBLE CHECK VALVE ASSEMBLY (DC) (DETAIL NOTES)	SCALE: NONE	640-4B
		DATE: SEPT 2017	

FILENAME: 640–4B.DWG



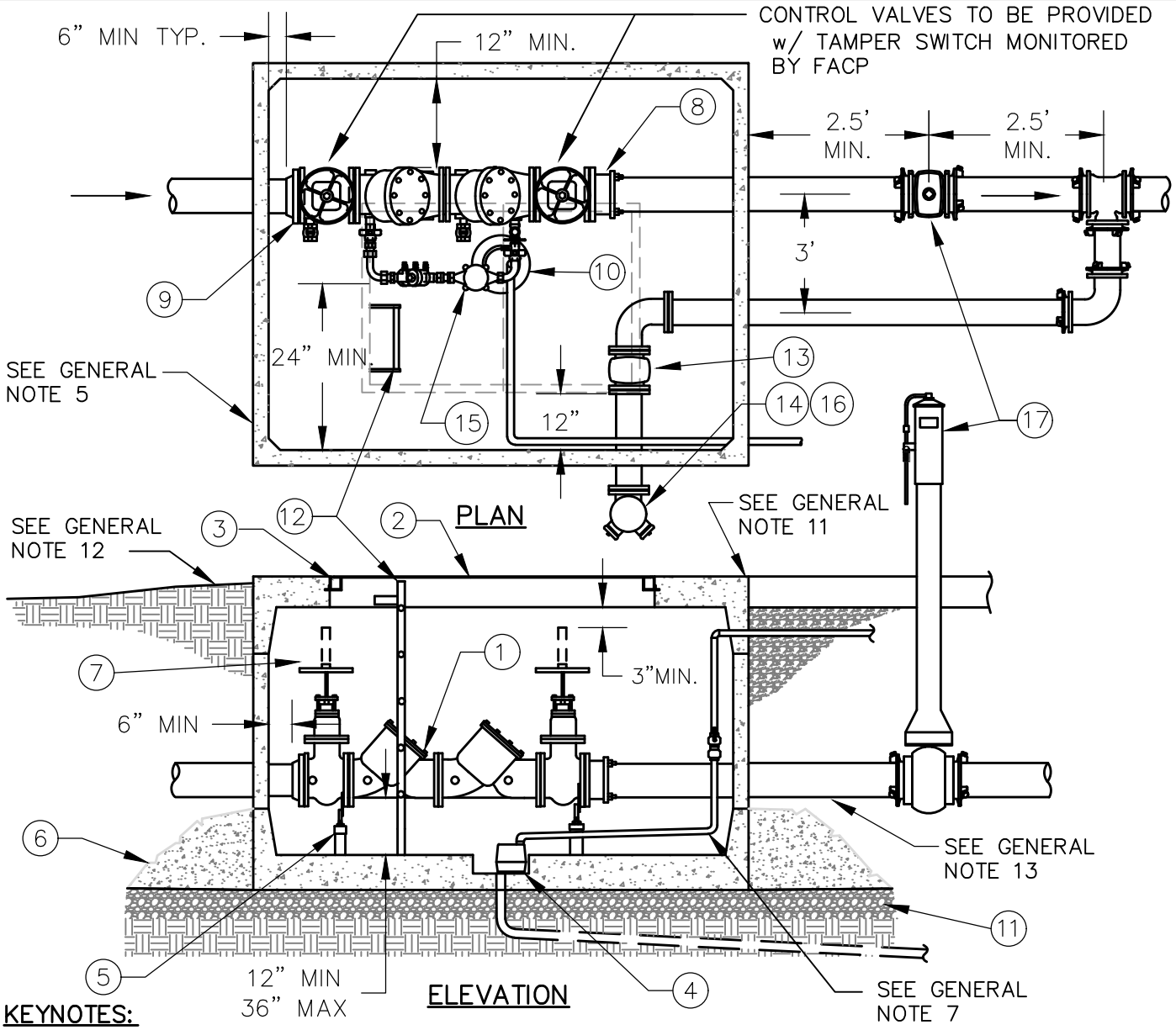
KEYNOTES:

① APPROVED DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) PER STANDARDS
② CONCRETE VAULT WITH ACCESS HATCH DOORS
③ TYPICAL VAULT DOOR
④ SUMP PUMP INCLUDING 1½" PVC DISCHARGE PIPING WITH CHECK VALVE, OR 4" PVC GRAVITY DRAIN WITH BACKWATER VALVE TO STORM SEWER
⑤ TYPICAL PIPE SUPPORTS PER GENERAL NOTE 10
⑥ TYPICAL CONCRETE BALLAST, SEE GENERAL NOTE 8
⑦ TYPICAL OS&Y GATE VALVES FOR DCDA, 3" MINIMUM CLEARANCE IN OPEN POSITION
⑧ FLANGE COUPLING ADAPTER
⑨ ADAPTER FLANGE
⑩ 12" DIA SUMP WITH PUMP OR GRAVITY DRAIN
⑪ COMPACTED CLASS B BACKFILL BASE 6" MINIMUM
⑫ OSHA–APPROVED LADDER, SEE 570–1
⑬ CHECK VALVE WITH BALL DRIP VALVE PER NFPA 13 AND NFPA 24 STANDARDS
⑭ FDC PER OREGON FIRE CODE, OREGON STRUCTURAL SPECIALTY CODE, NFPA 13,13R,14& 24 STANDARDS. LOCATION AS APPROVED BY THE FIRE CODE OFFICIAL.
⑮ DETECTOR METER, SEE GENERAL NOTE 15
⑯ FDC SHALL BE PROVIDED WITH LOCKING FDC PLUGS.

NOTE:

REFER TO 650–5C FOR GENERAL NOTES AND ADDITIONAL REQUIREMENTS.
USE DETAIL 640–5A OR 640–5B, NOT BOTH.

Hillsboro Water	**3" AND LARGER DOUBLE CHECK DETECTOR ASSEMBLY**	**SCALE: NONE** **DATE: AUG 2018**	**640-5A**



KEYNOTES:

① APPROVED DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) PER STANDARDS
② CONCRETE VAULT WITH ACCESS HATCH DOORS
③ TYPICAL VAULT DOOR
④ SUMP PUMP INCLUDING 1½" PVC DISCHARGE PIPING WITH CHECK VALVE, OR 4" PVC GRAVITY DRAIN WITH BACKWATER VALVE TO STORM SEWER
⑤ TYPICAL PIPE SUPPORTS PER GENERAL NOTE 10
⑥ TYPICAL CONCRETE BALLAST, SEE GENERAL NOTE 8
⑦ TYPICAL OS&Y GATE VALVES FOR DCDA, 3" MINIMUM CLEARANCE IN OPEN POSITION
⑧ FLANGE COUPLING ADAPTER
⑨ ADAPTER FLANGE
⑩ 12" DIA SUMP WITH PUMP OR GRAVITY DRAIN
⑪ COMPACTED CLASS B BACKFILL BASE 6" MINIMUM
⑫ OSHA–APPROVED LADDER, SEE 570–1
⑬ CHECK VALVE WITH BALL DRIP VALVE PER NFPA 13 AND NFPA 24 STANDARDS
⑭ FDC PER OREGON FIRE CODE, OREGON STRUCTURAL SPECIALTY CODE, NFPA 13,13R,14& 24 STANDARDS. LOCATION AS APPROVED BY THE FIRE CODE OFFICIAL.
⑮ DETECTOR METER, SEE GENERAL NOTE 15
⑯ FDC SHALL BE PROVIDED WITH LOCKING FDC PLUGS.
⑰ POST INDICATOR VALVE WITH TAMPER SWITCH AND BREAKAWAY PADLOCK. LOCATION AS APPROVED BY THE FIRE CODE OFFICIAL.

NOTE:

REFER TO 650–5C FOR GENERAL NOTES AND ADDITIONAL REQUIREMENTS.
USE DETAIL 640–5A OR 640–5B, NOT BOTH.

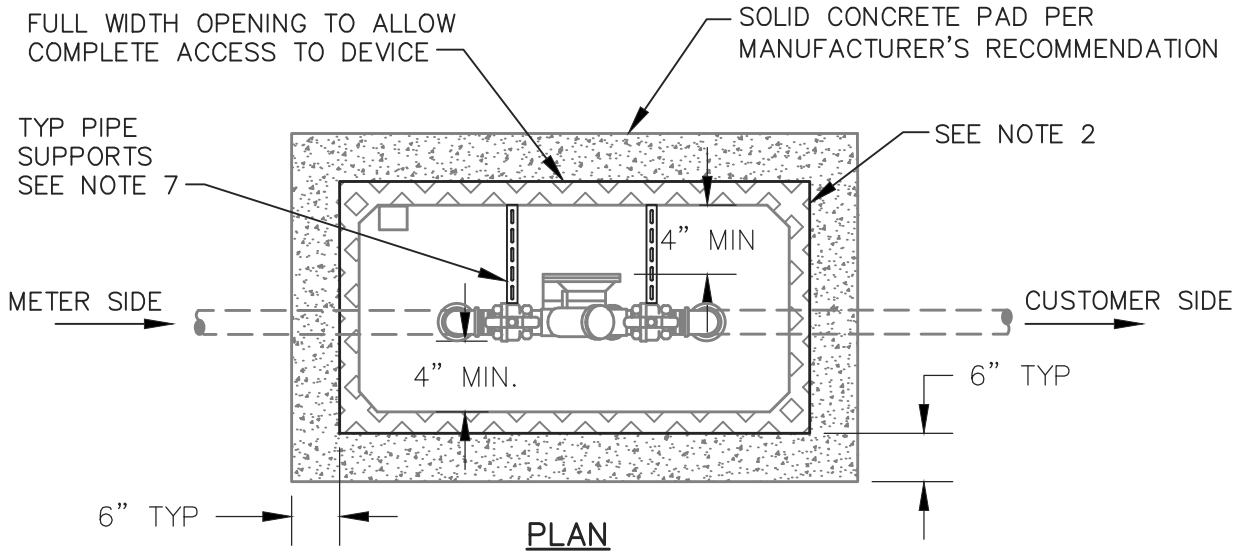
Hillsboro Water	3" AND LARGER DOUBLE CHECK DETECTOR ASSEMBLY	SCALE: NONE DATE: AUG 2018	640-5B

VAULT INFORMATION		
DCVA SIZE	OLDCASTLE VAULT NO.	DOOR MODEL NO.
4"	676–WA	676–T–2–332P
6"	687–WA	687–T–2–332P
8"	5106–WA	5106–3–T–2–332P
10"	5106–WA	5106–3–T–2–332P
OR APPROVED EQUAL		

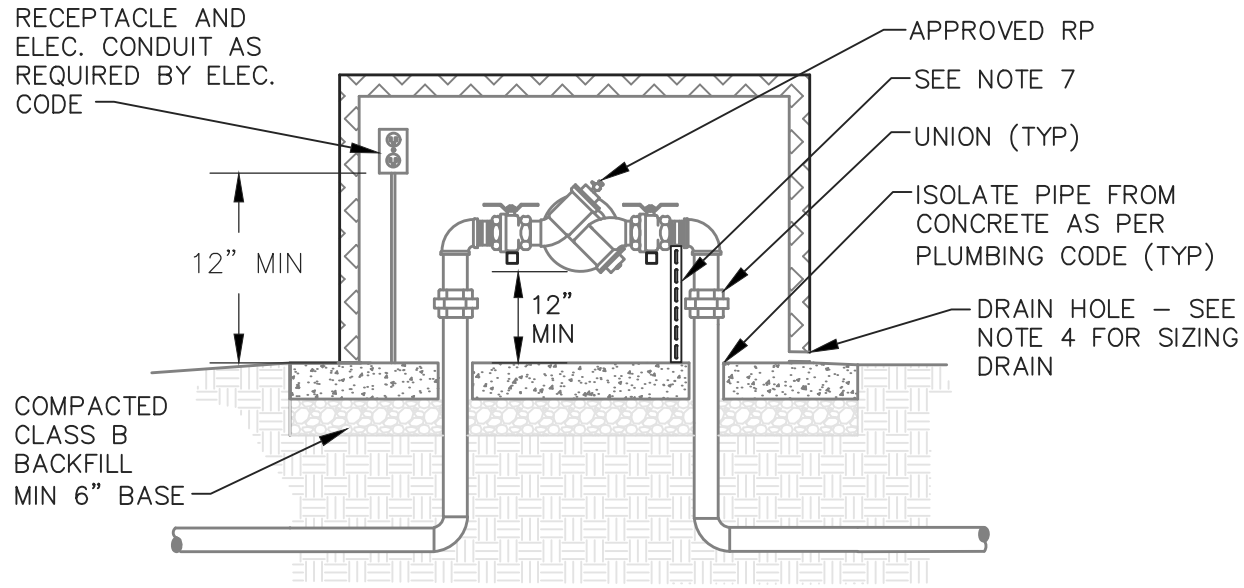
GENERAL NOTES:

1. CONSULT WITH FIRE DEPARTMENT FOR SIZING OF DCDA.
2. THIS IS TO BE A PRIVATE FACILITY, GOVERNED BY OPSC, NFPA, OREGON HEALTH AUTHORITY, AND HILLSBORO FIRE MARSHAL, AS APPLICABLE.
3. ALL MJ JOINTS SHALL HAVE MECHANICAL JOINT RESTRAINTS.
4. CONTRACTOR TO SEAL ALL OPENINGS IN VAULT WITH NON–SHRINK GROUT OR "LINK–SEAL."
5. COAT ALL EXTERIOR VAULT SURFACES WITH CO–MA–SEAL, OR APPROVED EQUAL.
6. PROVIDE POWER SOURCE AS REQUIRED FOR SUMP PUMP. SECURE POWER CORD TO DISCHARGE PIPING WITH NYLON CABLE TIES. SEE 570–2 FOR SUMP PUMP INSTALLATION DETAILS.
7. PLUMB PUMP DISCHARGE TO APPROVED LOCATION PER PLUMBING INSPECTOR.
8. IN AREAS PRONE TO HIGH GROUNDWATER POUR CONCRETE BALLAST (3 CUBIC YARDS MINIMUM); ENGINEER IS RESPONSIBLE TO ENSURE ADEQUATE BALLAST IS PROVIDED TO PREVENT FLOATING OF VAULT.
9. VAULT DOOR MECHANISMS SHALL NOT PROTRUDE BELOW THE CEILING OF THE VAULT INTERIOR.
10. ASSEMBLY IS TO BE SUPPORTED BY A SUBSTANTIAL RUST–RESISTANT PRODUCT SUCH AS "STANDON" OR APPROVED EQUAL TO PREVENT UNDUE STRESS OR STRAIN ON THE ASSEMBLY AND PIPING.
11. VAULT TOP SHALL BE SET LEVEL WITH ADJACENT HARD SURFACE (CONCRETE OR AC PAVEMENT).
12. FOR INSTALLATION IN LANDSCAPE AREA, PLACE VAULT TOP 3"–5" ABOVE GROUND SURFACE AND SLOPE GROUND AWAY AT ¼" PER FOOT TYPICAL. DO NOT BURY HATCH DRAIN.
13. EXTEND DUCTILE IRON PIPE 5' MINIMUM OUT OF VAULT TO PROTECT FROM BREAKING DUE TO VAULT SETTLEMENT.
14. SEE 640–5A FOR PLAN AND ELEVATION VIEWS. TYPICAL LAYOUT SHOWN, MAY BE INSTALLED IN OPPOSITE CONFIGURATION TO CONFORM TO SITE CONDITION REQUIREMENTS.
15. DETECTOR METER SHALL BE NEPTUNE T–10 MAR WITH E–CODER)R900i METER READING SYSTEM.
16. WHEN LOCATED IN PEDESTRIAN WALKWAY A NON–SLIP LID AND GROUTED PICK HOLES ARE REQUIRED.

Hillsboro Water	**3" AND LARGER DOUBLE CHECK DETECTOR ASSEMBLY (DETAIL NOTES)**	**SCALE: NONE**	**640-5C**
		DATE: SEPT 2017	



PLAN

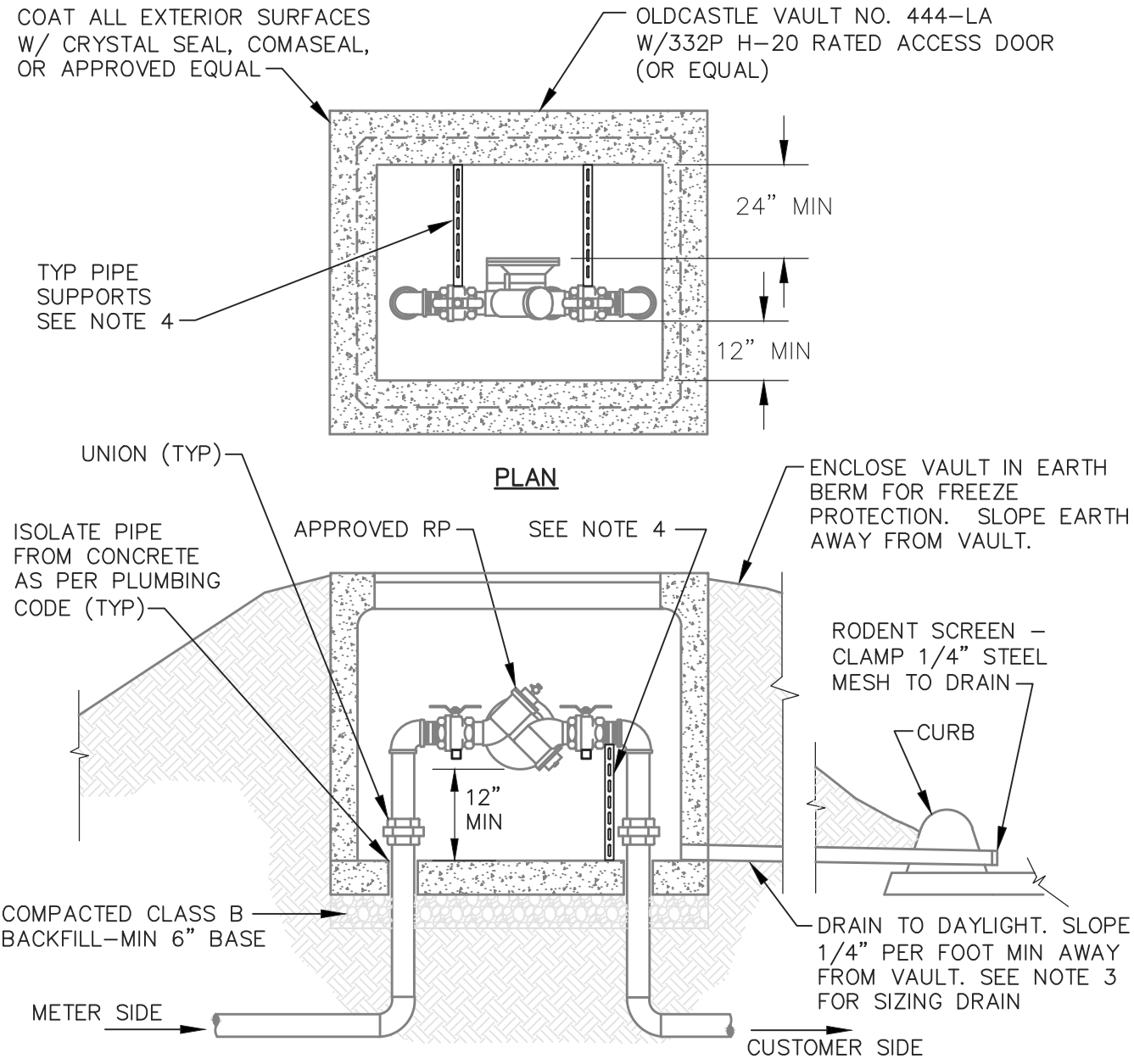


ELEVATION

NOTES:

1. PLACE RP WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND RP.
2. PROVIDE ADEQUATE PROTECTION AGAINST FREEZING, SUCH AS AN INSULATED AND HEATED PRE–MANUFACTURED ENCLOSURE (HOT BOX, SAFE–T–COVER, OR APPROVED EQUAL).
3. CUSTOM–BUILT ENCLOSURES MUST BE PRE–APPROVED BY WATER DEPT DURING PLAN REVIEW.
4. PROVIDE A SCREENED DRAIN CAPABLE OF PASSING A FULL RELIEF DISCHARGE (SEE 640–10 FOR GUIDANCE ON DRAIN SIZING).
5. ALL PRE–MANUFACTURED ENCLOSURES SHALL COMPLY WITH ASSE1060, CLASS III.
6. CONCRETE PAD MUST BE SET AT OR ABOVE SURROUNDING FINISH GRADE AND/OR MAXIMUM FLOOD ELEVATION.
7. DEVICE IS TO BE SUPPORTED BY SUBSTANTIAL MATERIAL SUCH AS UNISTRUT TO RESIST RUST AND DECAY. SUPPORTS ARE TO BE INSTALLED TO PREVENT UNDUE STRESS OR STRAIN ON THE DEVICE AND ITS SERVICE PIPING.
8. AS A PRIVATE FACILITY, THE INSTALLATION IS GOVERNED BY THE OPSC AND OREGON HEALTH AUTHORITY, AS APPLICABLE.
9. CONSULT WITH BUILDING DEPARTMENT FOR PROPER SIZING OF RP.

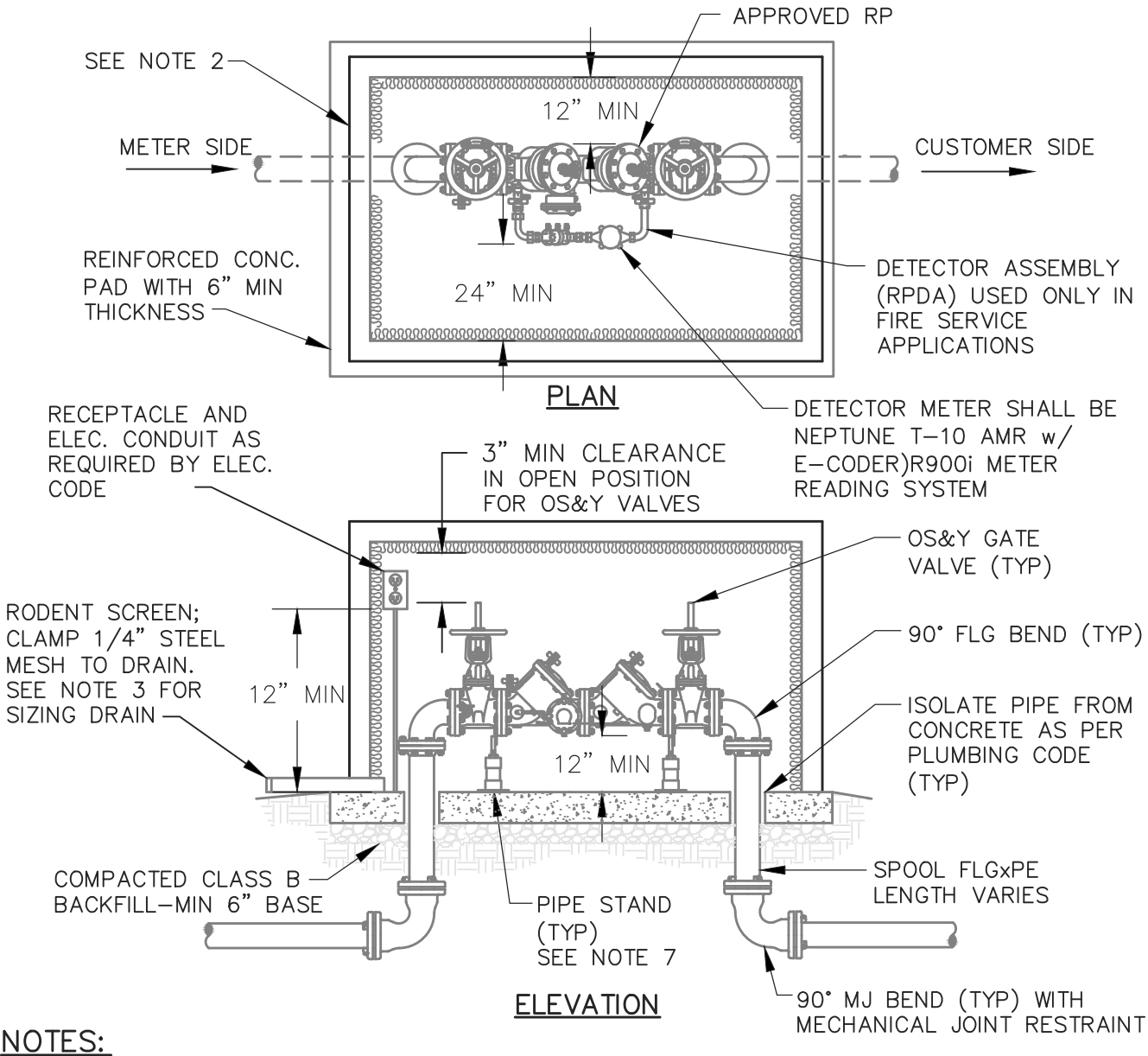
Hillsboro Water	**3/4" TO 2" REDUCED PRESSURE BACKFLOW ASSEMBLY (RP) ABOVE GROUND**	**SCALE: NONE**	**640-6**
		DATE: SEPT 2017	



NOTES:

1. PLACE RP WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND RP.
2. VAULT FLOOR ELEVATION MUST BE SET AT OR ABOVE SURROUNDING FINISH GRADE AND/OR MAXIMUM FLOOD ELEVATION.
3. PROVIDE A SCREENED DRAIN CAPABLE OF PASSING A FULL RELIEF DISCHARGE (SEE 640–10 FOR GUIDANCE ON DRAIN SIZING).
4. DEVICE IS TO BE SUPPORTED BY SUBSTANTIAL MATERIAL SUCH AS UNISTRUT TO RESIST RUST AND DECAY. SUPPORTS ARE TO BE INSTALLED TO PREVENT UNDUE STRESS OR STRAIN ON THE DEVICE AND ITS SERVICE PIPING.
5. AS A PRIVATE FACILITY, THE INSTALLATION IS GOVERNED BY THE OPSC AND OREGON HEALTH AUTHORITY, AS APPLICABLE.
6. CONSULT WITH BUILDING DEPARTMENT FOR PROPER SIZING OF RP.

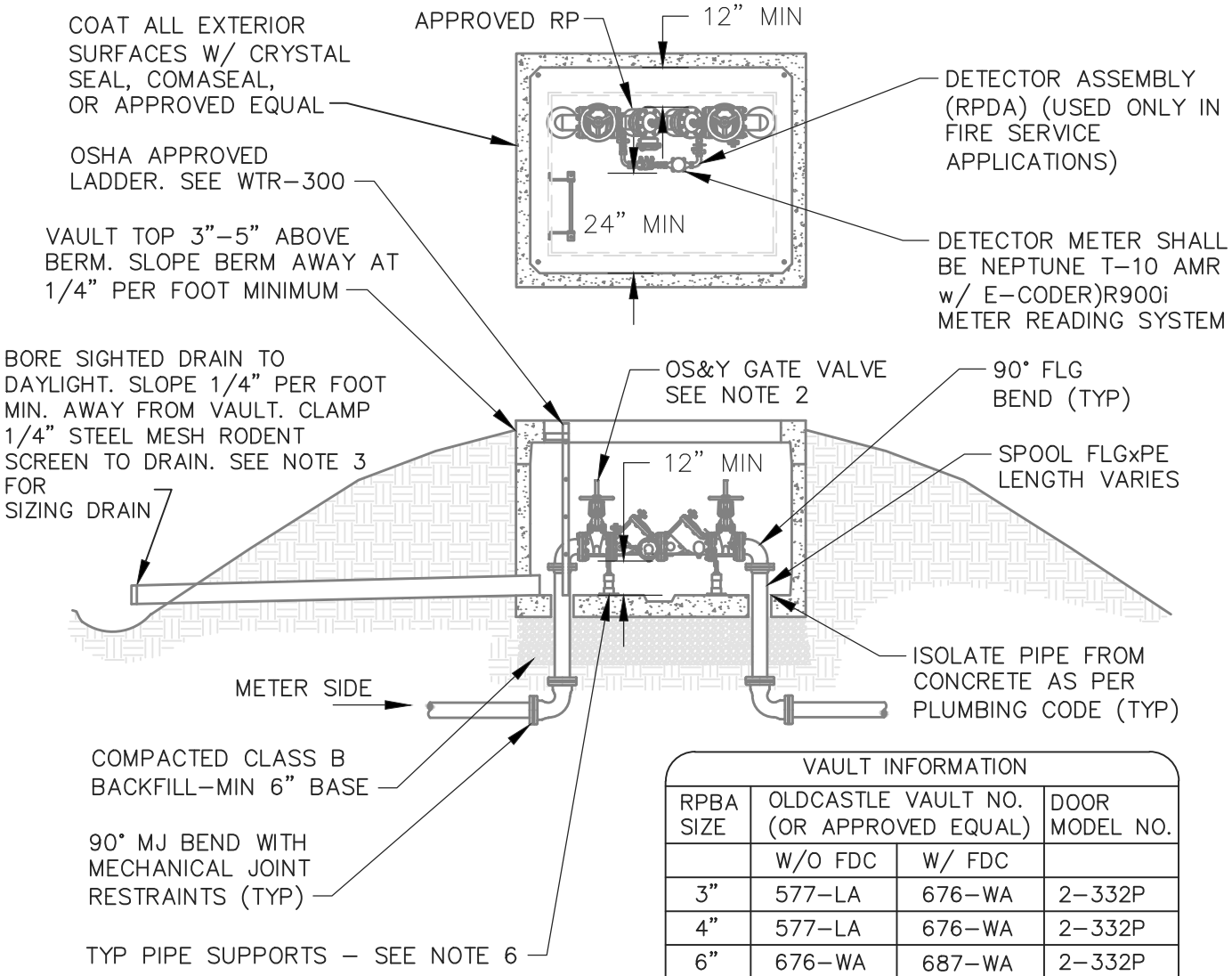
Hillsboro Water	**3/4" TO 2" REDUCED PRESSURE BACKFLOW ASSEMBLY (RP) IN BERM**	**SCALE: NONE**	**640-7**
		DATE: SEPT 2017	



NOTES:

1. PLACE RP WITHIN PROPERTY LINE AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND RP.
2. PROVIDE STRUCTURE WITH INSULATION AND HEAT SOURCE (SUCH AS HOT BOX, SAFE-T-COVER, OR APPROVED EQUAL) FOR FREEZE PROTECTION. GFI RECEPTACLE REQUIRED.
3. PROVIDE A SCREENED DRAIN CAPABLE OF PASSING A FULL RELIEF DISCHARGE (SEE 640-10 FOR GUIDANCE ON DRAIN SIZING).
4. A DOOR OR OTHER APPROVED ACCESS SHALL BE PROVIDED.
5. STRUCTURES SHALL COMPLY WITH LOCAL BUILDING CODES.
6. CONCRETE PAD MUST BE SET AT OR ABOVE SURROUNDING FINISH GRADE AND/OR MAXIMUM FLOOD ELEVATION.
7. DEVICE IS TO BE SUPPORTED BY SUBSTANTIAL MATERIAL SUCH AS UNISTRUT, STANDON, OR APPROVED EQUAL TO RESIST RUST AND DECAY. SUPPORTS ARE TO BE INSTALLED TO PREVENT UNDUE STRESS OR STRAIN ON THE DEVICE AND ITS SERVICE PIPING.
8. ALL MJ JOINTS SHALL HAVE MECHANICAL JOINT RESTRAINTS.
9. AS A PRIVATE FACILITY, THE INSTALLATION IS GOVERNED BY THE OPSC AND OREGON HEALTH AUTHORITY, AS APPLICABLE.
10. CONSULT WITH FIRE DEPARTMENT INSPECTOR OR BUILDING DEPARTMENT FOR SIZING OF RP.

Hillsboro Water	**3" TO 10" REDUCED PRESSURE BACKFLOW ASSEMBLY (RP) ABOVE GROUND**	**SCALE: NONE**	**640-8**
		DATE: SEPT 2017	



VAULT INFORMATION			
RPBA SIZE	OLDCASTLE VAULT NO. (OR APPROVED EQUAL)		DOOR MODEL NO.
	W/O FDC	W/ FDC	
3"	577-LA	676-WA	2-332P
4"	577-LA	676-WA	2-332P
6"	676-WA	687-WA	2-332P
8"	687-WA	5106-WA	2-332P
10"	5106-WA	5106-WA	2-332P

NOTES:

1. ENCLOSE VAULT IN EARTH BERM AS TO PROVIDE ADEQUATE FREEZE PROTECTION.
2. OS&Y VALVES REQUIRED ONLY IN FIRE SERVICE APPLICATIONS. (MINIMUM CLEARANCE OF 3-INCHES REQUIRED BETWEEN VAULT LID AND TOP OF OS&Y VALVES IN OPEN POSITION.)
3. PROVIDE A SCREENED DRAIN CAPABLE OF PASSING A FULL RELIEF DISCHARGE (SEE 640-10 FOR GUIDANCE ON DRAIN SIZING).
4. ALL ENCLOSURES SHALL COMPLY WITH ASSE1060.
5. VAULT FLOOR MUST BE SET AT MINIMUM 12 INCHES ABOVE SURROUNDING FINISH GRADE TO ALLOW GRAVITY DRAINAGE.
6. DEVICE IS TO BE SUPPORTED BY SUBSTANTIAL MATERIAL SUCH AS UNISTRUT, STANDON, OR APPROVED EQUAL TO RESIST RUST AND DECAY. SUPPORTS ARE TO BE INSTALLED TO PREVENT UNDUE STRESS OR STRAIN ON THE DEVICE AND ITS SERVICE PIPING.
7. ALL MJ JOINTS SHALL HAVE MECHANICAL JOINT RESTRAINTS.
8. AS A PRIVATE FACILITY, THE INSTALLATION IS GOVERNED BY THE OPSC AND OREGON HEALTH AUTHORITY, AS APPLICABLE.
9. CONSULT WITH FIRE DEPARTMENT INSPECTOR OR BUILDING DEPARTMENT FOR SIZING OF RP.
10. FOR DOMESTIC SERVICE APPLICATIONS RP MUST BE PLACED AS CLOSE TO METER AS POSSIBLE WITH NO CONNECTIONS OR TEES BETWEEN METER AND RP.

Hillsboro Water	**3" TO 10" REDUCED PRESSURE BACKFLOW ASSEMBLY (RP) IN BERM**	**SCALE: NONE**	**640-9**
		DATE: SEPT 2017	

NOTES:

1. Trees shall be planted in accordance with the following procedure:

Step 1. Dig a hole at least two (2) times the diameter of the root ball and to a depth that will allow the trunk flare to be level with the existing ground.

Step 2. To encourage rooting, score the edge of the hole to roughen the edges.

Step 3. Free the root ball as specified below:

a) For balled and burlapped trees, remove the tie material and peel back the burlap to carefully expose soil on at least the top 1/3 of the root ball without breaking the root ball apart. Except as provided in B (below), only materials that are untreated and biodegradable may be left around root ball after planting.

b) For wire basket contained trees, cut off the wire basket to a depth of at least 18 inches from the top of the root ball.

c) For container grown trees, remove the tree from the container and softly loosen the outer roots without disturbing the root ball.

Step 4. Set the tree on undisturbed solid ground in the center of the hole so that the upper surface of the root ball or trunk flare is approximately 2" above the surrounding soil.

Step 5. Set tree plumb, upright, and faced toward the street for best appearance and to orient the scaffold branches to best provide the required clearance over the street and sidewalk as the tree matures. Prune to remove any broken subordinate branches. Pruning scaffold branches prior to or after planting to obtain the required 5-feet branch height will not be allowed.

Step 6. Gently backfill the hole ½ full with amended soil and flood the hole with water to remove any air pockets. Amended soil shall be a mix of one half native soil and one half commercial compost or a mix recommended by the nursery providing the tree.

Step 7. Continue to backfill the hole with amended soil, and when completed, thoroughly saturate the planting area with water to remove any remaining air pockets.

Step 8. Apply 2-4 inches of medium or medium fine bark mulch around the tree. Maintain a mulch free area within two (2) inches of the trunk.

Step 9. Create a continuous 3 inch high berm around the hole to direct water to the roots.

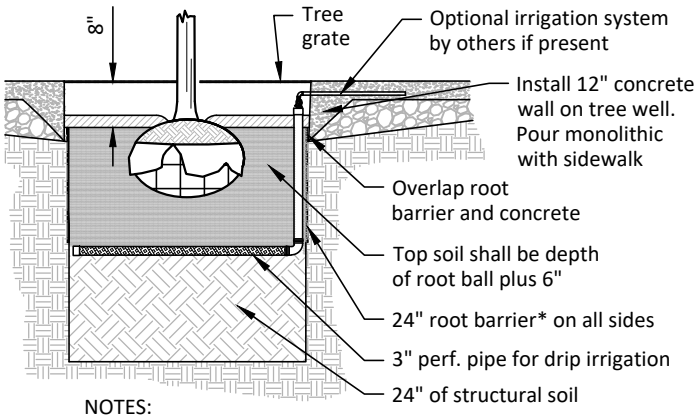
Step 10. Drive two 2" x 2" x 8' knot-free wood stakes firmly into the ground outside of the hole to prevent root damage.

Step 11. Attach the tree to both stakes 4 feet above the ground using Chainlock #4 tree ties (or equivalent that is at least 1 inch wide) to prevent damaging the tree trunk. Attach the ties to the tree in a manner that allows the tree to move but still be held firmly in place.

Step 12 Install 18" x 10' approved root barrier* where any tree is planted within 4' of a sidewalk or driveway.

*APPROVED ROOT BARRIERS:

1. Deeproot UB 18-2
2. Villa Linear Barrier
3. NDS EP-1850
4. Typar Biobarrier
5. OR Approved Equal

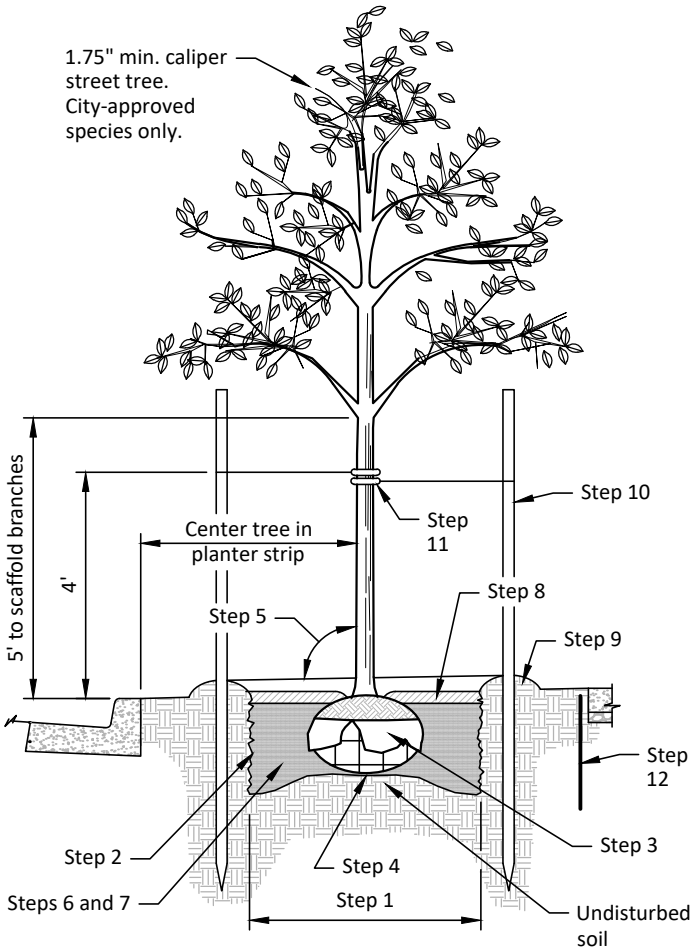


NOTES:

1. Follow the same general procedure as below. Note that steps 1, 2, 9, 10, and 11 are not applicable.
2. Tree grates may only be used with prior City approval and the Engineer must demonstrate that they are required to meet ADA regulations.

TREE GRATE OPTION

SCALE: NTS



STREET TREE PLANTING

SCALE: NTS

Hillsboro Public Works

STREET TREE PLANTING

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

STD. DRG. NO. 730-1

SCALE NTS

FILE NAME: COH-730-1.DWG

PLOT DATE: 10/31/2019 8:24 AM